COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

Volume 20 NEW YORK, THURSDAY, NOVEMBER 17, 1921 Number 20

One Explanation of Increased Coal Prices

EVERY attempt to answer the public's demand for knowledge as to who is getting the difference between the present and pre-war prices of household coal should be encouraged. It is the delivered price of coal that impresses the everyday consumer, and he will respond to a reasonable appeal to his sense of fair play.

The New York Trust Co. recently published the results of a study of present and pre-war costs of household anthracite in New York City. From mines to consumer's curb in Manhattan the price of the stove size of hard coal is shown to have increased from 1913 to 1921 by $6.64 per net ton, or 100 per cent. Of this gain, mine labor is reported as taking $2.70 per net ton, and railroad freight and lighterage in New York harbor $1.47. The retailer's gross margin—that is, the difference between cost on cars at his yard and the price he charges delivered at the householder's curb—has increased $1.08, which amount, it may be argued, is largely represented by increased costs of doing business. The operator's gross margin, which includes Federal taxes, interest on investment and profit, is reported to have increased 28c.

It is brought out in this study that wholesale—that is, mine—prices have increased 134 per cent, compared with a gain of 100 per cent in retail prices. There is no special significance to be attached to this point. The final price has increased in proportion to the weighted average of its components, and mining costs have gained the most. Furthermore this study by the New York Trust Co. is but one sample of the retail end of the business. It is, we believe, an honest attempt to answer a pressing question, the answer to which is easy for any particular ton of coal, but difficult for all coal, because of the little appreciated diversity of factors involved.

Will the Public React to a Coal Strike As to the Threatened Rail Tie-up?

THERE is now assembled at Washington a conference to settle or attempt to settle the largest question before the peoples of the whole world—the reduction of taxation through limitation of armaments. Reduced to simplest terms the conferees are meeting to find a way to substitute reason for force in settling international disputes. It is as if players of chess having kings, queens, rooks and pawns, each in number corresponding to wealth, were meeting to reduce the game from a question of resources to one of science and reason, by limiting the number of pieces with which the game is played to that which is fair to all. It is the hope and prayer of the peoples of the world that this conference will succeed where that in Paris failed. The destructiveness of force has been made evident; hope lies in the constructiveness of reason.

We hate warfare but we are not afraid of it. Three weeks ago this country faced the prospects of a nation-wide railroad strike—a form of warfare. The country squared itself for a fight, deploring the necessity, if necessity it had become, but determined to see it through, if need there should be. The temper of the public was belligerent, but when the issue was settled, at least for the time being, a great sigh of relief arose from coast to coast.

Who won? The labor unions? No, because they have only postponed a further reduction in wages—the immediate cause of the strike threat. The railway managers? No, because they welcomed a trial of force at this time. The public won; won because the outcome is the upholding of the law of the land, which puts public welfare above class desire. The issue on which the public made itself heard was not the adequacy of wages, but strict compliance with the procedure set up by law for the determination of wages. The world is sick of strife and warfare and its costs in life and treasure.

There is another industrial dispute of national proportions looming up on the horizon. The organized coal miners of the country are meeting the pressure of a vast public demand that their wages come down in order that people may have cheaper fuel. There is no denying the pressure of economic forces everywhere pushing prices of everything lower and the value of the dollar higher. The miners cannot hope to maintain the level of wages they exacted when prices and profits in coal were higher than are now economically justified. Perhaps they recognize this and only hope to save themselves from too drastic a cut next April, when their contracts expire. There is no reason to expect that they will gracefully accede to a reduction, much less offer to accept one.

Will a resort to force be necessary next spring? Is a strike inevitable? We do not believe it is, but there must be a reversal of form in every camp—miner, operator and public—if it is to be averted. But will public opinion play as large a part in a controversy between coal-mine operators and miners in the spring of 1922 as it did in the winter of 1919 or as it did last month in the railroad dispute? It is one thing for consumers, practically unprepared, to face a suspension of coal production at the approach of winter or the stoppage of transportation at any time, and another thing to contemplate a cessation of coal production at the beginning of warm weather and with bins and storage piles heaped up with coal.

In the pre-war days of biennial negotiations and suspension of mining in April and May, there seldom was cause for national concern, because the lack of production was always discounted in advance by ample storage of coal. It was seldom the case that the total coal produced in those years was less than it would have been had there been no strike. The year 1916 was an example of this. In anticipation of a stoppage in April con-

sumers had taken large quantities of coal in advance. There was no suspension that year but mining operations were almost as slack as if there had been one—because of no market.

On the other hand, conditions may be quite different in the spring of 1922. For reasons now unforeseen or because of holding back in anticipation of lower freight rates, consumers may not protect themselves with ample storage before March 31, 1922. Business and industry may be improving so rapidly at that time as to upset all calculations as to coal requirements. Next spring may be the one spring when a strike or suspension would prove to be a matter for national concern. Where such is true, the public becomes judge, jury and executioner. It may be worth while to consider in advance some way to forestall such a contingency.

The Slogan Wins

PUTTING the issue in simple words is good campaign psychology, whether it be a mayoralty campaign in Greater New York or an advertising campaign for the coal industry. The pull of the slogan "Hylan for Five-Cent Fare" was demonstrated by the astounding vote that gentleman received last week. Five cents for a ride on a street car or subway as distinguished from 8c. or 10c. for the same service was a subject for decision not above the comprehension of the majority of voters. It had an appeal as convincing as Mark Hanna's slogan on the "Full Dinner Pail," even though it does not appear really to have been the issue at all.

Voters in vast multitudes will rally around a popular issue. Such an issue a year ago was the high price of coal, not the coal the Steel Corporation or the American Wooden Mills burn but the coal the voter buys and puts in his cellar or in his back yard. It is as simple to cry aloud for lower coal prices and berate the operators as profiteers as for the Tammany candidate for Mayor of New York to emblazon "Five Cent Fare" on his banner and assert that he alone stands between the "interests" and the public.

A real task in publicity is to take to the public a real, constructive, simple story on coal. Such a story cannot be so simple as a pronunciamento that prices can't come down because things are as they are. The railroads, for instance, have been saying that they could and would meet the demand for lower freight rates when their principal item of cost—labor—was lowered. They have staunchly met the threat of strike of the railway workers' unions by continuing to say that they will press for wage reductions so that freights may come down. They are meeting the issues with the slogan "Wages down, freights down." And the public, informed and on guard, is with them so long as they proceed in an orderly fashion.

The railroads are in a fortunate position respecting the publicity on their profits. They merely turn to the record of the Federal Government to substantiate their statements that they are not profiteering. If the price of coal to the consumer can be reduced only by reducing wages, then the consumer asks and is entitled to know how far and how soon wages can be reduced. Everyone but a few individual coal operators and the miners have been saying for months that not later than next April coal mine wages must come down. But so far there has been no slogan, no united effort, except that of the United Mine Workers, to offset the insistent pressure of public opinion against coal.

The biggest issue that now confronts the coal industry is labor, and there is no organization among the operators qualified to have or express a national opinion on the subject. Apparently incapable of having a national policy on labor, is it any wonder there is no sign of a national effort to prepare the miners and the public, and themselves as well, for what readjustment and deflation can and must be had before the coal industry and the business of the country dependent on coal for fuel and power can settle down for the long pull?

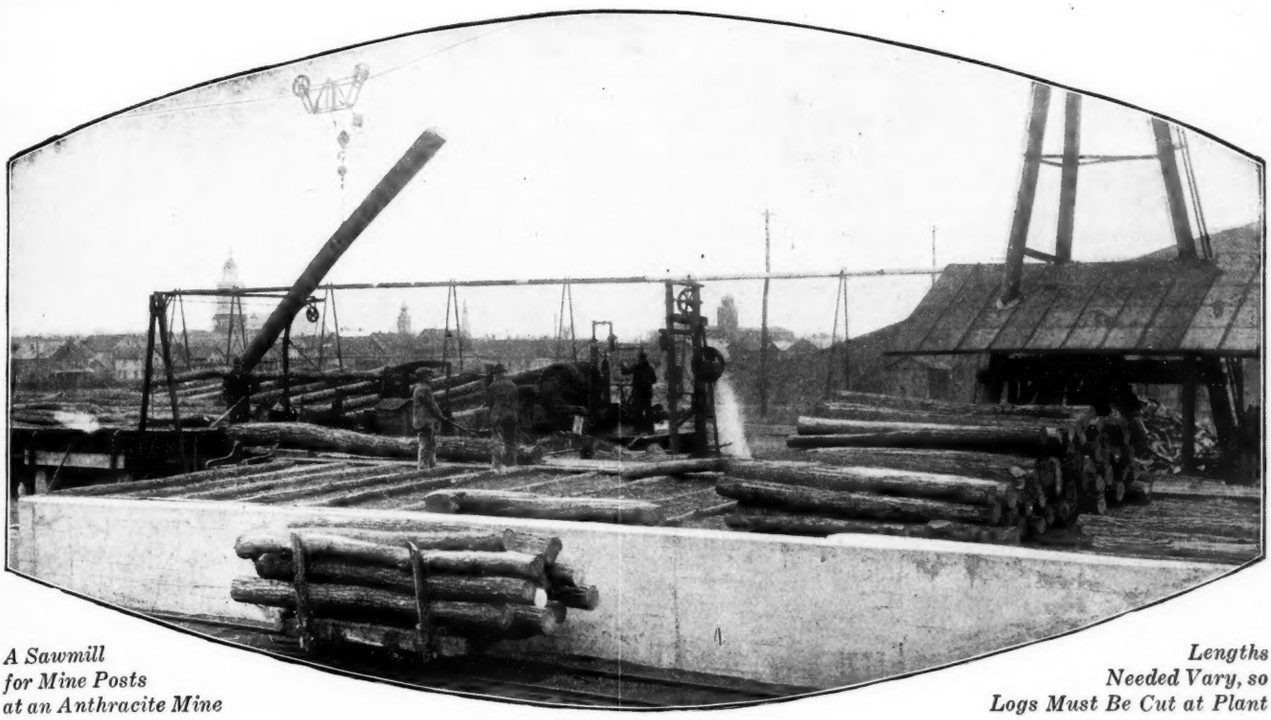
Superpower Project Is Sound

MANY there are who look upon the superpower plan as a fantastic dream of theorists—something that sounds well but, of course, will not be realized. We believe the idea is sound. As a complete enterprise, as pictured in the report just issued by the Geological Survey, it may not be attained, but the fundamental conclusions are worthy of study by the coal industry. The whole conception is founded on more efficient production and distribution of power in an area where in prosperous times power is at a premium. There is nothing save the atrophy of industry on our Atlantic seaboard that can prevent the fulfillment of the essentials of the superpower dream, and nothing will so limit industrial expansion here as lack of the cheap power this system will supply.

It is the conclusion of the engineers who made the survey that producing power is a business in itself and that users large and small will turn to central station power at an accelerated rate. Some 19,000 miles of railroad in the zone examined are held to be susceptible of economical operation by electricity to be supplied largely by power companies. The question that should concern the coal industry is whether the power companies will in turn own the mines from which the needed coal is to come or will leave the supplying of coal to the coal men, as, in turn, a business in itself. Beyond question the tendency now is for large consumers of power to own and operate their own mines. The newer large central stations are developing new mines as they go along.

Of importance too for the seller of coal is the anticipated increase within the next decade in the dimensions of the power plants. Whereas in 1919 the average size of the electric utility plants within the Boston-Washington zone was 7,900 kw. by 1930 this size will have been increased to 29,900 kw. It is noted in the report that the average size of new steam electric plants to be installed will be 218,000 kw. as against the present 10,000 kw. In other words, with the buying power concentrated in fewer hands, the competition in selling coal for central power plants will be many times keener than now. A situation similar to that in the Chicago territory will develop in the East, in which a few large consumers can make or break the market in ordinary times because their huge requirements represent such a large portion of the offerings of steam coal in that market.

It is the opinion of the engineers making the report that the superpower system should confine its activities to the production of power and the storage of coal. Ownership of coal mines, coal cars, and coal delivery routes were each considered and are opposed. The possibilities of stabilizing the Eastern steam coal market offered in prospect by this system are great.



A Sawmill for Mine Posts at an Anthracite Mine

Lengths Needed Vary, so Logs Must Be Cut at Plant

Wood Preservative Which Makes Putrescible Matter Stable, Strengthens Timber, Making It Fire Resistant

Consists of Oxides of Copper and of Zinc, Ammonia and Carbolic Acid—Solution of Copper Oxide in Ammonia Dissolves Albumin, Cellulose and Pectines, Making New Bodies Which Cement Wood and Render Inconstant Substances Stable

By F. G. Zinsser*

Of the many preservatives that have been used for prolonging the life of timbers the most important are chloride of mercury, sulphate of copper, chloride of zinc, creosote and a combination of the last two.

The impregnation of dried wood with a cold solution of bichloride of mercury produces excellent results. The bichloride is extremely antiseptic and has the advantage of small bulk. It is sold in solid form, and the difficulties of transportation are therefore entirely eliminated. In spite of all this and the fact that a complete and permanent preservation can be obtained with 2 or 3 per cent of this salt, the cost is prohibitive, and the poisonous character of the mercury salts makes their use extremely dangerous.

Sulphate of copper is used in 1 or 2 per cent water solution. It is inexpensive, and for this reason as well as for its good qualities it has been used in many European countries. As it is not caustic it does not injure the wood and leaves it clean and odorless. Being an astringent, the wood into which it is injected becomes more tenacious. Because the oxide of copper, which protects the vegetable fiber, is volatilized only at a high temperature, this treatment makes the timber less combustible. Nitrogenous matter impregnated with sulphate of copper becomes rotproof, because a metallic substance hostile to parasites has combined with the albumens, which are then no longer likely to rot. Copper sulphate has kept ties and posts, when placed under conditions which retain this antiseptic in the wood, in a perfect state of preservation forty-four years after they were placed.

Unfortunately, sulphate of copper seriously affects iron. Nails and spikes coming in contact with it are corroded through the formation of sulphate of iron. For that reason vacuum and pressure injections can be made only in copper impregnating apparatus, and this is too expensive to be used economically.

However, sulphate of copper in the presence of rain water and earthy alkalies in the soil is dissolved. Posts impregnated with it and placed in the ground lose their copper entirely under the action of these solvents, and in five or six years become quite rotten, according to Leduc, Director of Belgian Telegraphs, in the *Revue Universelle des Mines*, 1897. When the copper has disappeared the pores of the wood are open to the attacks of a legion of microbes.

When wood is treated with zinc chloride in a water solution it is either immersed in open vessels or impregnated by a vacuum-pressure treatment. This preservative has great antiseptic qualities, and the compound formed with the albuminous substances of the wood strongly resists rotting. Unfortunately, like copper sulphate, it does *not* resist the action of solvents, and is decomposed in the presence of lime in the soil.

*President, Zinsser & Co., Hastings-on-Hudson, N. Y.

As it is hygroscopic—absorbing water from the air—it can be used only in places that are permanently dry. Like wood treated with copper sulphate, when freed of the preservative the pores of the wood are left open and favor putrefaction, with resultant disintegration.

Pine ties impregnated with zinc chloride lost 80 to 85 per cent of the original salt three years after impregnation, and beech ties from 90 to 95 per cent. Zinc chloride is an acid salt, and when it combines with the albuminous substances in the wood it sets free hydrochloric acid, which, according to Hutin and Boutigny, damages the vegetable fiber. The acid also attacks iron, and this in railroad ties and in much other equipment is highly undesirable.

Creosote Long Known as Stable Preservative

the fatty and oily substances, such as paraffin, inert most desirable as a preservative. It shows great stability, and for that reason has had extensive use for this purpose. It is a thick fluid, which must be raised to a temperature of 178 deg. F. for diffusion through wood, and a large quantity of it must be used if the best results are to be obtained. In 1876 the Western Railroad Co. of France reduced the quantity used on its ties about one-third, but found that after three years rot began to appear, and that after five years the ties had to be removed. The loss of creosote from creosoted ties on the roads of the company just mentioned is shown in the table given below:

Date	Pounds	Date	Pounds
August, 1904	45 29	October, 1907	18.84
October, 1904	37.69	October, 1908	17.85
October, 1905	28.76	October, 1909	17.08
October, 1906	22.44		

After all, oil is an emollient which softens the vegetable fiber and lowers its physical resistance, and while the fatty and oily substances, such as paraffin, inert in themselves, will remain, the antiseptic elements—carbolic acid, aniline and the like—being soluble in water, are apt to be removed.

Carbolic Acid Soon Washes Out of Wood

Blocks of wood impregnated with carbolic acid, which would seem to promise long life because that acid is the most effective matter contained in the coal-tar oils, do not show the resistance expected of them. The coal-tar oils themselves, containing some carbolic acid, are found to be better preservatives, as the insoluble fatty matters tend to act as a waterproofing, and the rain is less able to remove them. When creosote is applied to paving, however, it has been found that it does *not* prevent the moistening of the wood sufficiently to prevent expansion and consequent heaving. Wood treated with creosote is sticky, heavy and difficult to handle, has an irritating odor, and it is asserted that the creosote increases inflammability.

From 15.6 to 18.7 lb. of creosote per cubic foot of timber is recommended abroad for satisfactory results. The cost is therefore high considering the additional expense of manipulation, and to this must also be added the freight where the creosote has to be carried long distances. This is important, as the creosote is used without dilution, and every pound used must be transported.

According to Henri Monseur, the inventor of the wood preservative Ac-zol, this substance retains all the important properties of the older preservatives and eliminates their objectionable features. As he frankly says, he is not offering anything new in the way of antiseptics, but makes use of the well-known qualities of carbolic acid, which is the active principle of creosote oil, and the efficient action of both zinc and copper. He compounded these in such a manner that though readily soluble during the treating process, they become permanently fixed in the wood after impregnation is complete and the wood dried. He makes use of the fact that an ammoniacal copper solution softens wood fiber, and that after the ammonia, which acts simply as a carrier, has evaporated, the combination of copper and wood fiber becomes hard again. That is how artificial silk is made.

This preservative, as the name implies, is made up of ammonia, copper, zinc and phenol, the latter being the chemical name for carbolic acid. Softened in the manner described above, the wood absorbs the solutions readily, and after the ammonia is evaporated, the salts of zinc and copper with carbolic acid, being neither corrosive nor conductors of electricity, are firmly and permanently imbedded in the wood. The antiseptic qualities of these salts are well known. None of the vegetable parasites, worms or wood borers can live in their presence.

Preservative Adds Strength to Wood Fibers

It should be added that the carbolic acid, being present in combination with these metals, does not impart any odor to the wood. The preservative actually increases the strength of the wood as the copper and zinc salts combine with the vegetable matter, such as albumin, tannin and pectines, and form a sort of binder, which hardens to a cement, closely uniting the wood fiber.

Ac-zolated wood placed in mines in 1910 and 1912 is still in position in 1921. After nine years of service it is in perfect preservation, and in all probability will last for a long time to come, whereas untreated timbers in the same position were totally unfit after six or seven months. This is the statement of G. Deltenre, managing director of the collieries of l'Arbre St. Michel at Mons lez Liége, one of the largest collieries in Belgium.

Wood consists of two parts, the sapwood and duramen. The sap, or imperfect new wood, contains channels surrounded by living cells composed of cellulose, pectine and albuminous substances. The decomposition of these is rapid as soon as the life of the plant ceases. The duramen is the center of the tree and is formed of completely lignified tissue in which living substances are replaced by incrustations of mineral bodies drawn from the soil, such as lime, magnesia, iron, silica, etc., and also contains tannins. This part of the tree is extremely resistant to decay. The Ac-zolating process does the work that nature has not had time to accomplish in the sapwood by changing its chemical composition.

The first engineers to use Ac-zol were Lambiotte and Grad, director general and chief engineer respectively of the Elizabeth and Courcelles-Nord collieries in Belgium. At the Elizabeth colliery, Auvelais, Belgium, several timbers were placed in the return airway on Sept. 20, 1910, some treated with Ac-zol and some untreated. On Jan. 10, 1911, two of these, one treated and the other untreated, were taken out. The latter was rotted to such an extent that it could no longer offer effectual resistance. Four rings of each of these two timbers were sent to the State Testing Station at Malines and were submitted to a crushing test. The average crushing strength of the untreated was less than half of the treated timber. Only the center of the untreated material, about 1.6 in., remained fibrous.

Regarding the timber placed Sept. 20, 1910, I have no further information, but J. O. Grad, now works director of the Courcelles-Nord colliery, in March, 1918, declared that Ac-zolated timber placed Oct. 15, 1910, in a return airshaft in the Allaye mine at a depth of 458 ft. was still in good condition and likely to serve for many more years.

On Feb. 6, 1918, according to Carlo Fremin, chief engineer of the D'Aiseau-Presle collieries, the timber placed in a return airway in the Roselies shaft workings in July, 1913, was still in place and likely to give several years of service, despite the fact that unimpregnated timbers placed in May, 1914, had been renewed each year since that date.

Dr. A. Berge, professor at the University of Brussels, reduced three kinds of treated wood to sawdust and treated the dust with water saturated with carbon dioxide and alkalies. The wood treated with 2 per cent of copper sulphate lost 77 per cent of its copper. The one treated with 2 per cent of copper sulphate and 3 per cent of ammonia lost 41 per cent of that metal and that treated by Ac-zol lost only 3½ per cent.

Experiments on Wood in an Activated Soil

He then took pieces of wood and placed them in wet ground charged with a solution of invert sugar and brewers' yeast. After forty-eight hours at 86 deg. F. the Ac-zolated wood lost 4½ per cent of its copper and wood impregnated with 2 per cent of sulphate of copper, 81 per cent. As Ac-zol does not contain either sulphates, chlorides or nitrates, it does not attack iron.

Wood was immersed in Ac-zol for twenty-four hours by Durieux, general overseer in the research service and experimental station for rivers and forests of the Belgian government. It was then desiccated and buried for nine months with manure, when it was again dried and weighed. The Ac-zolated wood lost 9.11 per cent, whereas natural wood lost 38.26 per cent and that treated with a 2 per cent solution of copper sulphate lost 22.61 per cent of its weight. These are averages of many experiments made on samples of alder, fir, birch, oak and pine.

At the Malines State Experimental Station in Belgium five sets of tests were made for the resistance to compression. The average results were for creosoted wood, 4,125 lb.; wood treated with sulphate of copper, 7,538 lb., and Ac-zolated wood, 8,164 lb. per square inch. Under tension the results were: Creosoted wood, 5,021 lb.; wood impregnated with copper sulphate, 5,547 lb.; Ac-zolated wood, 8,150 lb. per square inch. Four compression tests were made on behalf of the management of the Elizabeth colliery by the same authorities on treated and untreated timber. Natural wood showed a strength of 6,614 lb. and Ac-zolated wood, 12,829 lb. per square inch.

The salts of the heavy metals contained in Ac-zol render the wood fire resistant, and so long as these salts have not been volatilized by high temperatures, their presence diminishes the fire danger. Ac-zol is transported in a highly concentrated form. Six or eight parts of this solution with 94 or 92 parts of water is the proper concentration for treatment, which can be made either by immersion, a vacuum-pressure treatment or by application with a brush. Where small quantities of wood are to be impregnated and where means for vacuum and pressure treatment are lacking, a simple cold immersion is sufficient and insures a very satisfactory penetration where heavy oils would not penetrate, even when applied hot, except in a superficial manner. However, even with Ac-zol the vacuum and pressure method is always preferable. This system is much easier for the injection of Ac-zol and much more rapid than with creosote, the first being applied cold whereas coal-tar oils without the aid of heat are not sufficiently liquid to penetrate.

It may be added that the wood impregnated with Ac-zol can not only be tinted with any color but after being dried can be painted. Its increased strength

PILES OF WOOD TO BE USED IN THE MARVINE MINE OF THE HUDSON COAL CO. FOR POSTING ROOF

This picture is not only expressive of the large part timber plays in the development of an anthracite mine but also shows the long conveyors which are used at the Marvine breaker for transporting the coal from the headhouses for treatment. These lines carry the coal over the railroad and are 1,100 ft. long.

makes it especially valuable wherever the timber is subject to great weight. Where stocks of timber have to be carried, the wood is often found to have lost 40 per cent of its resistant power before it is put in the mine. When Ac-zolated, it can be kept in stock without deterioration and as the replacement of timber is less frequent, stocks can be diminished, saving appreciably in invested capital and the area devoted to its stocking. Furthermore, timber can be purchased when it is cheapest, be brought to the mine when it is best transported, and still be in condition for replacement when needed.

Who's Who In Coal Mining

H. G. Williams

THOUGH he is consulting manager for the Utah Fuel Co., H. G. Williams no longer spends all his time in Utah, yet any stranger interested in coal mining, coming into the state, would soon learn that he was the dean of the coal operators of Utah and one of the outstanding figures in the Rocky Mountain region.

Mr. Williams was born in 1856 at Merton, Wis., where he received a general education. Later he entered the University of Chicago. In his junior year at this institution he was forced to stop his studies on account of poor health.

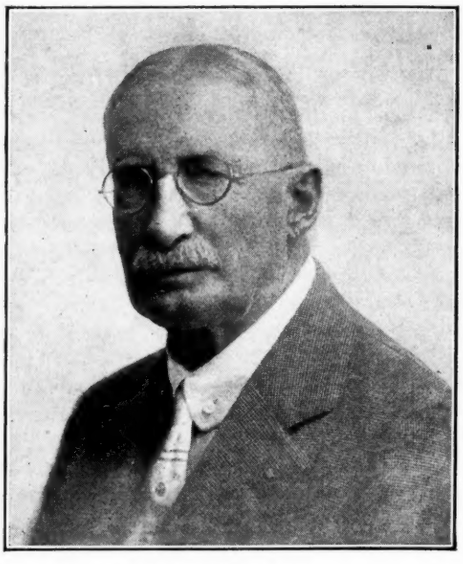
Starting as a transit man for the Atchison, Topeka & Santa Fé R.R., he constantly rose to higher positions with a progress that was both rapid and sure. In 1880, one year after he was employed as a transit man by the Santa Fé, he was given charge of a division out of Atchison, Kan. After holding this position he resigned and became superintendent of the Capitol Iron Works at Topeka, Kan., for two years, when he was called back (in 1883) to the Santa Fé railway and made engineer and sales agent for the coal companies in Kansas belonging to that railroad.

In 1884 he was mining engineer for the Raton Coal & Coke Co. In 1886 he was raised to chief engineer, and his authority was extended to the San Pedro Coal & Coke Co. in New Mexico and the Trinidad Coal & Coke Co. in Colorado. In 1887 he added the engineering work of the Canyon City Coal Co. in Colorado to his other tasks, these companies all being controlled by the Atchison, Topeka & Santa Fé Ry.

In 1888 he was made chief engineer for all the coal properties of the railroad company, including, in addition to the above, the Cherokee & Pittsburgh Coal & Mining Co., and the Osage Carbon Co. of Kansas. In 1890, after the change in control of the Atchison, Topeka & Santa Fé Ry., Mr. Williams resigned and took the position of chief engineer with the Pueblo Smelting & Refining Co., Pueblo, Col. This position he resigned in 1891 to become assistant superintendent and engineer for the Pleasant Valley Coal Co. in Utah, which is now part of the Utah Fuel Co.

In 1892 he returned to the position of chief engineer with the Pueblo Smelting & Refining Co. and two years later rose to the position of assistant general manager. In 1896 he was again called to Utah by the Pleasant Valley Coal Co. to become its superintendent and chief engineer, with headquarters at Castle Gate. From that time until the present Mr. Williams has been identified with the same company, rising to the position of general superintendent in 1900, to general manager of both the Pleasant Valley Coal Co. and the Utah Fuel Co. in 1901. After holding the position for fourteen years, he resigned in 1915 and became consulting manager, which position he still holds. He was succeeded as general manager by A. H. Cowie.

Utah has produced a number of coal operators whose successful accomplishments have made them known to the coal industry all over the United States, and due to the fact that the Utah Fuel Co. (including the Pleasant Valley Co.) was for many years the outstanding coal producer of the state most of these men have worked for Mr. Williams or been associated with him. Mr. Williams is a man of forceful character, but possesses a kindly and sympathetic disposition and a keen sense of humor, which give him the great gift of holding his friends.



H. G. WILLIAMS
Consulting Manager, Utah Fuel Co.

Mr. Williams has always zealously guarded the safety of his men and either initiated or assisted in the adoption of the methods which are used in the coal mines of the state to protect the miners. This includes the sprinkling system, which is used in all the mines of the state and which provides a sprinkling line to every working place, also the electric shot-firing system from the outside of the mine, which is in use at the majority of the state's mines. Utah now has probably the most modern set of safety regulations of any coal-mining state in the Union, and when these were being discussed in 1920 Mr. Williams, although resting in California, made a careful study of them and submitted valuable suggestions which were embodied in the final draft.

ABOUT THE ONLY KIND of strike now popular in this country is the averted one.—*Chicago Daily News.*

IT IS REVEALED THAT there are some volunteers in the army of the unemployed.—*Pittsburgh Gazette Times.*

How and How Often Should Mine Electrical Equipment Be Inspected and What Repair Is Necessary?

Economical Maintenance Should Be Assured by Light and Heavy Inspecting, Overhauling and Repairing, the Intervals Between Inspections Depending on Local Conditions—Rub Down and Blow Out Locomotives Every Evening

BY H. H. JOHNSTON*
East Pittsburgh, Pa.

MINE equipment will never operate satisfactorily nor will its failure in service be prevented if its various parts are not carefully and systematically inspected periodically. The work of maintaining electrical equipment usually is divided into several classes, the number of which depends, particularly in the mining field, upon the nature of the equipment and the thoroughness of the inspections made.

Some operators divide the work of maintaining equipment into four classes: (1) Light inspection, (2) heavy inspection, (3) overhauling, and (4) repairing. The first three usually are done regularly on a periodic basis, or in accordance with the number of trips made or the tonnage hauled. How often the inspections should be made and what work should be done depends largely on local conditions, and must be determined by trial under the circumstances actually existing.

Almost every mine operator has his own individual way of inspecting, maintaining and handling his equipment, but, because of local conditions, better facilities or greater familiarity with the equipment, some are more successful than others in keeping down the cost of operation.

It has been found, particularly by operators of large mines, that records of inspection covering the number of pieces, cost of each piece, and the time required in repairing or replacing it are of much value.

So far as light inspections of mine locomotives are concerned, before attempting to inspect any part of the electrical or mechanical equipment the trolley wheel should be withdrawn from the wire. Care should be taken to so place the locomotive as to render impossible any interference with the operation of other equipment. Safety should always be made the primary consideration.

Under light inspections will come the observations in general of all mechanical equipment, including the condition of the bumpers, safety lugs, side frames, springs and spring details, condition of trolley wheel, trolley-spring tension, condition of motor commutator, brushes, brush tension, commutator cover, gear cases, motor-bearing lubrication, axle-bearing lubrication, the journal box and its lubrication, and the observation of the controller parts, including the condition of the main drum, main-drum contacts, and the tension on and condition of the main- and reversing-drum contact fingers. During these observations note should be made of any apparent defects which might cause the locomotive to be put out of commission even temporarily prior to the next inspection.

The time allowed between light inspections will depend much upon local conditions, and each mine operator usually must determine their frequency by experience. Without reference to exact local conditions but calculated on the basis of mileage traversed, one such inspection should be made for every 500 to 1,000 miles of travel. Oiling bearings does not usually come under light inspection, and good practice has dictated that these parts be lubricated before starting each day's work.

Many operators require their locomotives to be rubbed down with waste and "blown out" with an air hose every evening after the day's run has been completed. This is good practice and will do much toward keeping the equipment in proper condition.

One heavy inspection should be made for every five to six light inspections, as conditions prevailing in the particular mine may seem to require. In general, such an inspection should be made about every three months if the locomotives are regularly in service. All apparatus should be thoroughly cleaned and lubricated and all necessary repairs made in addition to the work ordinarily performed at the light inspection.

OVERHAUL EQUIPMENT EVERY THREE YEARS

Some operators make a practice of giving their locomotive equipment a complete overhauling at least once every three years, or at about every sixth or eighth regular heavy inspection. In addition to the work done during each heavy-inspection period, the overhaul should consist of the removal of various assembled parts composing the individual pieces of apparatus on the locomotive. The drum of the controller should be taken off to permit a thorough cleaning and inspection and the condition of the cable and insulation should be noted. All cable and insulating material that underwent treatment during manufacture should be retreated according to the practice recommended by the manufacturer or previously found satisfactory by the operator.

The motors and all parts of the armature, field coils, brushes and bearings should be carefully overhauled. The resistors, fuse boxes, overload relays, trolleys and cable should be thoroughly inspected and put in good working condition. All mechanical details of the machine, including bumpers, side frames, springs,

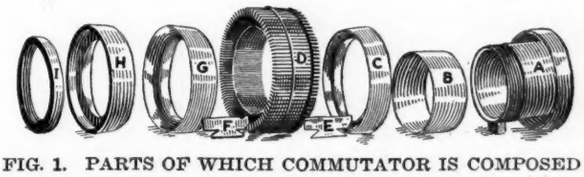


FIG. 1. PARTS OF WHICH COMMUTATOR IS COMPOSED

A, Metal bushing; B, insulating bushing or sleeve; C, rear mica V-ring; D, assembled copper and mica segments; E, mica strip or segment; F, copper segment or bar; G, front mica V-ring; H, metal V-ring; I, ring nut.

*General engineering department, Westinghouse Electric & Manufacturing Co.

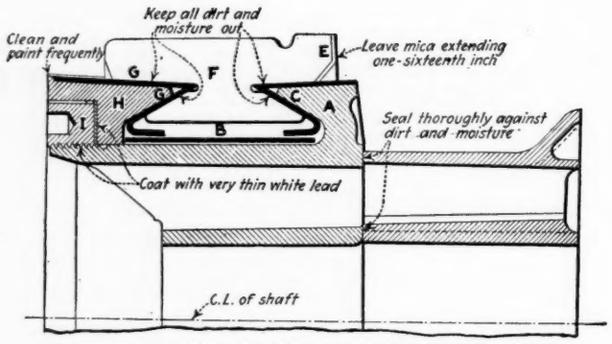


FIG. 2. SECTION OF COMMUTATOR WITH PARTS ASSEMBLED

The letters on these various parts are the same as those in Fig. 1, and the relative position of the parts when in place is shown. The drawing designates the points where all dirt and moisture must be excluded if good results are to be obtained.

spring details, brakes, brake rigging, motor supports and main journals should be inspected and repaired or renewed if necessary.

With a view to bringing the details of upkeep before operators the following has been written, giving methods and practices that have been found efficacious.

Commutators usually consist of a metal bushing with a fixed V-ring dovetailing with the rear "V" in the commutator section, an insulating bushing or sleeve, a rear mica V-ring, the assembled copper and mica segments, a front mica V-ring, a metal V-ring, and a ring nut or holding bolts. In building up these parts to form the assembled commutator, care is necessary if the machinery is to be operated satisfactory. Even with the best of care, specific individual attention must be given to practically all of these parts.

The main operations necessary in the care of commutators are: Smoothing of the commutator face, undercutting, disconnecting leads from commutator necks, and the replacement of parts both when commutator and windings are left on the shafts and when they are removed therefrom.

All Armature Leads Need Not Be Removed

When only a small number of commutator bars are to be replaced it is not always necessary to remove all the armature leads from the commutator necks or to take the commutator off the shaft. To disconnect the necessary leads it is current practice to stand the armature on end with the commutator up and mark each part that is to be disconnected or removed. Upon removal of the ring nut or holding bolts, the V-ring and mica V-ring can be taken out. If the commutator bars are tight, tapping with a wooden or rawhide mallet usually will cause them to loosen. A steel hammer should never be used for this operation. Each new bar that replaces an old one must be filed to shape and brought down to the thickness of the old bar, if it or the old ones next to it are not to become loose. The space where the new bars are to fit should be planed out and the bars tapped into place with the aid of a rawhide mallet.

All detached parts of the commutator must be kept clean and dry. When the parts are ready for returning to place, the mica V-ring should be sandpapered. The metal V-ring and the "V" in the commutator bar should be cleaned, the "V" in the bar being shellacked. Care should be taken to have both the shellac and the brush used in applying it free from dirt and moisture. Then either the V-ring nut is put on or the bolts are drawn up fairly tight after the mica and the metal V-rings have been slipped back into their original positions.

The use of a thin coat of white lead on the threads of the V-ring nut or those of the bolts will make it easier to remove the ring nut or bolts the next time this becomes necessary. The commutator is then heated to 110 deg. C. (230 deg. F.) in an oven where the air is dry. The ring nut or fastening bolts are then drawn up tight while the commutator is at this temperature.

The next operation is to turn the commutator in a lathe to give it once again a smooth surface. It is customary after these repairs to make a voltage test between commutator segments, also between the commutator bars and ground. With 250- and 500-volt motors, 110 volts alternating current should be used for the test between bars and 1,000 volts alternating current for the test between bars and ground.

When many commutator bars or a rear mica V-ring have to be replaced it is usually best to remove the commutator from the shaft. The method of taking down and rebuilding will be the same as that described above, care being taken to heat the commutator thoroughly and thereby soften the new mica so that the V-ring or bolts can be drawn up tightly. In doing this, and when the commutator is assembled, it should be put in an oven and heated to a temperature of 125 to 140 deg. C. (257 to 284 deg. F.). While at this temperature the commutator is placed in a press and a suitable pressure (20 to 25 tons for a 50-hp. motor) exerted upon it. The ring nut is then drawn up tightly while the commutator is still under pressure.

Temporarily Band Segments Before Shipment

Where complete sets of commutator segments are shipped out by the manufacturer, they usually are temporarily banded together, the mica and copper segments being in their proper positions. The complete set should be assembled in the commutator as a unit, the temporary band being removed just prior to the final tightening. After this, the test between commutator bars usually is made with 300-volt alternating current, while that to ground is made with 2,000-volt alternating current.

Any flat spots, high or low bars, ridges, burned places, etc., that may develop should be smoothed. When these are not too bad the motor need not always be removed from the locomotive. A block of wood one face of which has been cut to the radius of the commutator and lined with sandpaper or emery comes in handy for smoothing a rough spot. If the commutator face is extremely rough, the armature should be removed from the motor frame, placed in a lathe and turned. Holes that may be left by defective mica or pits in the side of the bars can be filled with a commutator cement supplied by dealers.

The commutator should be re-undercut before the copper segments have worn down flush with the mica insulation. The groove left will serve as a guide to the saw and make the work of undercutting much easier. If commutation trouble is frequent, it is good practice to use a V-shaped hand tool to round the edges of the grooves between bars to about $\frac{1}{32}$-in. radius. This can be done while the motors are in place on the locomotive. Care should be taken to remove all particles of mica, copper or dirt from the grooves after undercutting.

The band over the front V-ring of a commutator should be wiped off each month. If after cleaning this band is painted with an air-drying varnish the next cleaning will be accomplished with greater ease. It has been found that painting once every six months is sufficient.

Precautions Which, Taken, Will Render the Magneto a Reliable Igniter for Miners' Safety Lamps

Simple in Construction and Reliable in Operation, the Magneto Has Found a Place in Many Mines—In Order to Obtain Satisfactory Results the Device Should Never Be Needlessly Operated When Disconnected from Its Load

By R. Fokes
Walton-on-Thames, England

ADAPTABILITY of the magneto to various purposes in and about the mine has resulted during recent years in a marked increase in the use of this form of electrical generator. As a rule it has been applied to shotfiring and safety-lamp relighting, both of which operations previously had been effected by means of either dry cells or accumulators. Dry cells, which have been used only in connection with shotfiring, are expensive, cannot be recharged and give comparatively limited service. Accumulators, on the other hand, may be recharged, but have many disadvantages that render their employment not a question of choice but of necessity.

The magneto, with its comparatively small bulk, light weight and ever-ready supply of energy, is at present the most convenient form of portable current-generator available for relighting safety lamps. The principles underlying the operation of magnetos are not understood by many who use them in mining, however, and while they are highly reliable pieces of apparatus, it will be obvious that some knowledge of their construction and operation as well as of the causes of indifferent or interrupted service greatly assists in obtaining the best results.

Description of Construction of Magneto

A magneto consists essentially of a strong permanent magnet, between the poles of which rotates a shuttle-type of armature wound with a primary winding (*P*) and a secondary winding (*S*, Fig. 1). One end of the primary winding is connected to the slip ring, from which current is conveyed by means of a carbon brush to the terminal (*T*) of the external circuit. The other end of the primary winding is connected to the frame of the armature, as is also one end of the secondary winding, the other end being led to the contact maker and to the frame of the magneto. Thus when the contact maker is closed the secondary winding is short-circuited. This winding also has permanently connected across it a small condenser (*C*), as indicated. The general arrangement of the armature between the poles is shown in Fig. 2. Of course, the design may be varied at will, but the essentials remain the same.

In operation the magneto is, of course, only a modified form of transformer with a contact maker across the secondary winding. The voltage generated depends on the rate at which the lines of magnetic force are cut by the primary and secondary windings. The ordinary dynamo must be rotated at a constant, and in most cases a comparatively high, speed in order to obtain a sufficiently great electromotive force. The magneto, on the other hand, is called upon to operate efficiently over a wide range of speeds. As a result the general design is such as to make the actual speed of the armature of comparatively small importance. This is accomplished by means of the contact maker or make-and-break mechanism. This will be more fully described later; for the moment, consideration will be given to the effects of making and breaking the circuit of a magneto as the armature rotates.

Referring to Fig. 2, the lines of force from the permanent magnet are shown threading themselves through the iron core of the armature, which is assumed to be stationary. Assuming that the secondary winding is short-circuited through closure of the contact maker, any movement such as that in the direction indicated in Fig. 3 causes both the primary and secondary windings to cut the magnetic field. The primary circuit is normally interrupted by an air gap such as that existing between the lighting pin and wick of a miners' safety lamp. The secondary, with the armature in the position shown, is short-circuited by the contact maker and its movement through the magnetic field induces in it a heavy current in such a direction that it magnetizes the armature core so that a south pole appears in the portion nearest the north pole of the permanent magnet and a north pole is produced in the armature core near the south pole of the magnet. Now, like poles repel and unlike poles attract. Therefore, as shown in Fig. 3, the magnetic field produced by the armature current not only strengthens but distorts and twists the field of the permanent magnet in the direction of rotation. It is at this instant that the contact maker is adjusted to open, with the result that not only does the magnetic field produced by the armature current vanish but the field of the permanent magnet immediately resumes a more normal position, as indicated in Fig. 4.

This disappearance of the armature field and sudden readjustment of the permanent field together induce in the primary winding a high voltage capable of leaping a considerable gap and producing an intensely hot spark. The condenser in the secondary circuit serves to amplify the effect of interruption and simultaneously minimize burning at the contact maker. As the armature makes another half turn the circuit is again closed and the operation repeated, so that a make-and-break occurs twice during each revolution.

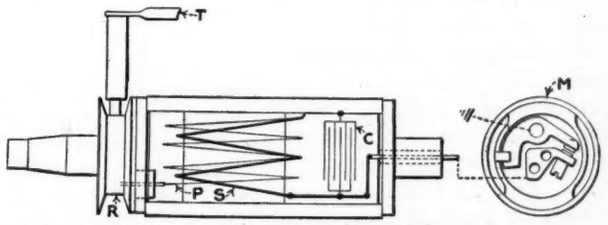


FIG. 1. ARMATURE CONNECTIONS AND ARRANGEMENT OF CONTACT MAKER FOR HIGH TENSION MAGNETO

P is the primary winding and *S* the secondary. *T* is the terminal of the external circuit. A small condenser *C* is provided. A carbon brush runs on the slip ring *R*. One end of the primary is connected to the frame of the armature and the other to the slip ring. When the contact maker is closed the secondary winding is short-circuited.

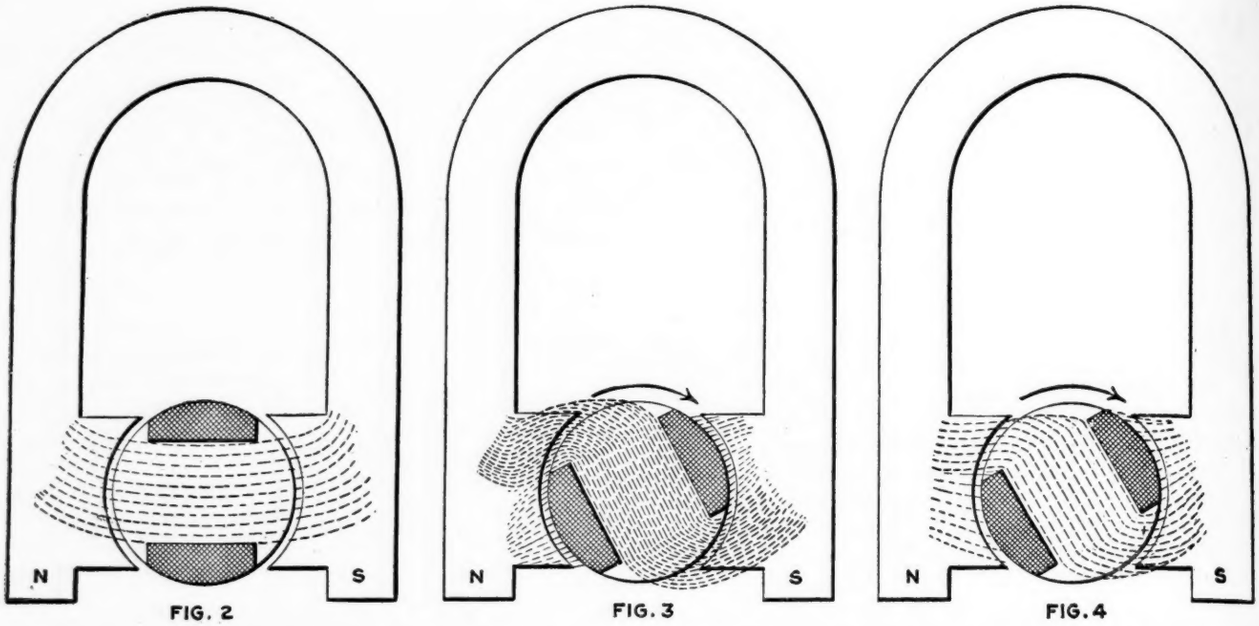


FIG. 2 FIG. 3 FIG. 4

FIGS. 2, 3 AND 4. SHOW HOW THE FLUX OF MAGNETIC FORCE CHANGES WITH REVOLUTION OF ARMATURE

The flux of force is straight through the armature in the position shown in Fig. 2. In Fig. 3 the primary circuit being interrupted by an air gap and the secondary being short-circuited through the contact maker, the magnetic field produced by the armature current strengthens and distorts the field of the permanent magnet. Just at this instant the contact maker opens and the magnetic field produced by the armature current vanishes and the field weakens as shown by the line spacings in Fig. 4.

The contact maker may take any one of a number of forms, but the arrangement shown in Fig. 1 and enlarged in Fig. 5 is the one most generally employed and is, on the whole, the most reliable. It is mounted on the end of the magneto-armature spindle and rotates with it. One of the contacts (*C*) is fixed while the other is movable, taking the form of an arm bent through an angle of 90 deg. and pivoted at *P*, carrying at one end a platinum point and at the other a fiber block (*F*) which as the armature rotates bears against the two raised portions or cams (*B*) fitted to the stationary cover surrounding the contact maker. This cover is arranged so that it may be rotated slightly on its seat, in order to adjust the position at which the making and breaking of the circuit occurs relative to that of the armature and the magnet poles. The position of the contact maker indicated in Fig. 5 shows the fiber block (*F*) rubbing on the fixed portion (*B*) and temporarily separating the contacts (*C*).

As already stated, a magneto is a highly reliable piece of apparatus, but there are certain qualifications which must not be overlooked if satisfactory results are to be obtained under ordinary mining conditions.

Mechanism for Obtaining Maximum Spark

As has been pointed out already, the cover of the contact maker carrying the cams (*B*) for interrupting the circuit may be moved around on its seat. The makers as a rule restrict this movement to a small arc within which the best position may be found by experiment. This most effective position is likely to vary slightly under working conditions, and from time to time it is advisable to make a readjustment in order to obtain the maximum sparking effect. The fiber block (*F*, in Fig. 5) tends to wear away somewhat on its forward or rubbing side, which delays the opening of the contact (*C*). Thus, apart from other influences, this wear will from time to time necessitate a slight readjustment of the relative position of the cover carrying the cams (*B*).

The arm carrying the fiber block (*F*) has a slight movement around the pivot (*P*) equal to the small amount the fiber block is raised by the cams (*B*). Normally, although not shown in the illustration, the arm is fitted with a spring which tends to keep contacts (*C*) closed and is depended on to rapidly close the contacts during the periods when *F* is clear of *B*. Any tightness at *P* will render the spring incapable of functioning properly, and this will interfere with the normal operation of the magneto. It should be noted that the contact arm is insulated from its spindle (*P*) by means of a fiber bushing. Under mining conditions, especially in damp atmospheres, this fiber has a tendency to swell and to prevent free movement of the arm. This sometimes makes the contact arm so stiff that its spring cannot reclose the contacts once they are pushed open. The remedy, of course, is to ease the bushing until the arm moves freely.

As the contact maker is continually making and breaking a comparatively heavy current, the contacts must be kept amply tipped with platinum. These tips should be at least $\frac{1}{16}$ in. in diameter and their faces should be dressed to make as perfect a contact as possible. The condenser minimizes the effect of sparking and should this become intense while the platinum contacts remain in good condition, it must be concluded that the condenser has broken down. This element seldom gives trouble, however, and sparking usually will be found to be the result of either badly-faced contacts or of the platinum having been burned away.

Many places where magnetos are called upon to work underground are more or less damp. However, as far as the armature of a magneto is concerned it is well impregnated during manufacture and is practically unaffected by moisture. If leakage occurs it is almost invariably at the terminal (*T*, Fig. 1), which is fitted at its lower end with a carbon brush running on the slip ring (*R*). This brush usually is carried in an ebonite block that fits into the frame of the magneto case, the brush projecting through to the ring. It is at this

point that any trouble arising from dampness always occurs, resulting in the ebonite insulation breaking down to the frame of the magneto. The only remedy is to keep spare ebonite blocks on hand, because once charring commences on the surface of a block it is useless to attempt to use it any longer. Oil is as detrimental to the insulation as dampness, as it collects dust and soon forms a conducting path along which leakage can take place. In this connection oiling of the magneto journal should be restricted to two or three drops every few months. This with ball bearings is quite sufficient.

The quickest way to break down the insulation of a magneto is to run it disconnected from its work, consequently this practice should be studiously avoided. Normally the magneto is connected with the lamp it is intended to light, and the lighting pin is adjusted to about $\frac{1}{8}$ in. or less from the lamp wick. As a result the voltage necessary to bridge this gap is restricted and the magneto windings as well as the wiring are subjected to a lower potential than would be the case if the gap were, say, twice as wide. If the magneto is run disconnected from its work it is, as it were, connected to a spark gap of infinite dimensions and will in consequence be subjected to an extreme voltage that will arc across from the high-tension elements to the frame, charring the insulation and doing permanent injury.

Although a magneto admirably fulfills the purpose for which it was intended, namely, the lighting of miners' lamps, its current-generating capacity is somewhat inferior to that of the older system involving the use of a spark coil and accumulator. With the latter the position of the lighting pin relative to the lamp wick was not of much importance provided it was within sparking distance. On the other hand the energy available from a magneto is limited, and to obtain quick ignition a little more care is necessary in adjusting the lighting pin. Setting this over the center of the lamp wick calls for the expenditure of a considerable amount of energy to obtain ignition in a given time. This is because of the heat dissipation within the body of the wick. For this reason better results are obtained by adjusting the lighting pin relative to the wick, as shown in Fig. 6. Under these conditions the spark strikes the corner of the wick and ignition occurs almost immediately. The point of the lighting pin should not be more than $\frac{1}{8}$ in. from the wick.

One highly desirable feature of a magneto is that it can be operated without damage while the armature is short-circuited. Advantage is taken of this fact in some types of relighters in order to guard against the danger of gas ignition in fiery mines by workers operating the magneto with the lamplighter insecurely fastened. This precaution is easily met by arranging the connections in such a manner that until a lamp is inserted for lighting and the apparatus is securely closed the magneto remains short-circuited. This feature should characterize any dependable form of underground magneto-operated lamp lighter.

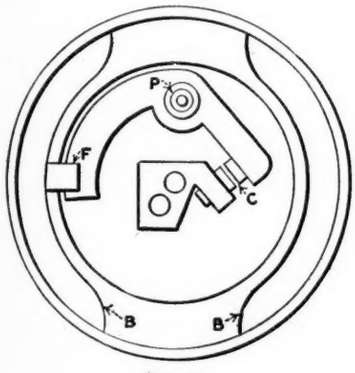


FIG. 5

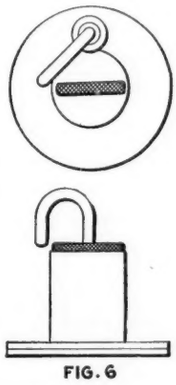


FIG. 6

FIGS. 5 AND 6. MAGNETO CONTACT MAKER AND LAMP WITH LIGHTING PIN

C is the contact maker and *F* the fiber block. *B* and *B* are the cams and *P* a pivot. The pivot should not be too light or it will prevent the spring which acts on the contact maker from closing the contact when the fiber block is free of the cams.

Peculiar Excellence of Kentucky Coals*

BY HOWARD N. EAVENSON†
Pittsburgh, Pa.

FOR some years past it has been increasingly evident that the consuming public has learned to appreciate the superior qualities of the coals produced in the eastern part of Kentucky and southern West Virginia, and to look more and more to this section for its supply of the best fuel. This is particularly true of high-volatile coals used in byproduct coking and in gas making. Many large corporations using such fuels have acquired their own sources of supply in this territory.

These coals come into direct competition with those from southwestern Pennsylvania, and a comparison of their qualities may be of interest alike to producers and their prospective customers. In making such a comparison, however, only the high-volatile coals can be considered, as the low-volatile fuels of Pennsylvania, Maryland and West Virginia have no counterpart in Kentucky.

The best Kentucky coals for the purposes mentioned are located in Harlan, Letcher, Pike, Floyd, Knott, Leslie and Perry counties, and comprise the Elkhorn, Freeburn, Thacker, Alma, Harlan, High Splint, Benham or Roda, Hazard and Fire-Clay beds. The best high-volatile West Virginia coals are those of Logan, Boone, Mingo, Wyoming, Kanawha, Raleigh and Fayette counties, and comprise the Coalburg, Chilton, Cedar Grove or Thacker, Alma, No. 2 Gas and Eagle beds.

TABLE I. RANGE OF EASTERN HIGH-VOLATILE HIGH-GRADE COALS

Kentucky Coals, 24 Samples	Average	Maximum	Minimum
Ash, per cent	4.78	9.32	1.56
Sulphur, per cent	0.75	1.78	0.44
Phosphorus, per cent	0.006	0.027	0.001
Byproduct yield per net ton:			
Tar, gal.	7.8	10.2	5.4
Benzol, free, gal.	2.6	3.2	2.3
Ammonium sulphate, lb.	28.1	34.1	22.4
Surplus gas, cu.ft.	5,068	5,520	4,740
Yield of coke, per cent	69.5	75.0	67.0
Fusing point of ash, deg. F.	2,654	2,940	2,430
West Virginia Coals, 31 Samples:			
Ash, per cent	5.29	9.09	2.59
Sulphur, per cent	0.99	2.76	0.63
Phosphorus, per cent	0.006	0.019	0.002
Byproduct yield, per net ton:			
Tar, gal.	8.0	10.6	5.8
Benzol, free, gal.	2.6	3.3	2.1
Ammonium sulphate, lb.	24.5	31.0	21.2
Surplus gas, cu.ft.	5,069	5,340	4,770
Yield of coke, per cent	72.8	76.8	68.2
Fusing point of ash, deg. F.	2,743	2,970	2,610
Pennsylvania Coals, 20 Samples:			
Ash, per cent	7.27	10.44	5.32
Sulphur, per cent	1.18	2.14	0.77
Phosphorus, per cent	0.012	0.018	0.005
Byproduct yield per net ton:			
Tar, gal.	7.8	10.1	5.8
Benzol, gal.	2.2		
Ammonium sulphate, lb.	25.1	29.8	22.8
Surplus gas, cu.ft.	5,497	5,654	5,304
Yield coke, per cent	67.5	70.0	64.2
Fusing point of ash	2,366	2,390	2,350

*Abstract from a paper entitled "Some Peculiar Values of Eastern Kentucky Coals and the Proper Methods to Realize on Them," read before the October meeting of the Kentucky Mining Institute.

†Consulting Engineer, Howard N. Eavenson & Associates.

The leading high-volatile Pennsylvania coals are those in Allegheny, Greene, Fayette, Westmoreland, Washington and Indiana counties, and comprise the Pittsburgh, Upper and Lower Freeport and Upper and Lower Kittanning seams.

The analyses shown in Table I are taken from a number at hand as being representative. Some of these are from samples from producing mines. Others are from outcrop openings. The average results are given, as well as the maximum and minimum figures obtained, so that the limits that may be expected will be known.

The surplus gas in each case is given as one-half of the total yield. In modern byproduct plants the amount of surplus gas usually exceeds this proportion.

Before making any decision about the relative merits of the coals under consideration, careful studies should be made of the individual mines. Treated broadly, however, these figures will be as shown in Table II.

TABLE II. RELATIVE RANKS OF COALS IN ABOVE QUALITIES

	Ash	Ash Fusing Point	Phosphorus	Tar	Ammonium Sulphate	Yield Benzol	Gas	Coke
Kentucky	1	2	1	2	1	1	2	2
West Virginia	2	1	2	1	3	1	2	1
Pennsylvania	3	3	3	2	2	2	1	3

Freight rates usually are the determining factor in the choice between coals of nearly equal quality. In this respect the Pennsylvania coals have a great advantage because of their proximity to the larger markets. There are many points west and north of the Ohio River, however, to which the rates from the various territories are approximately equal, and a study of the relative values of these different products is interesting. The values of the byproducts obtainable given in Table III represent a fair average for the territory north and west of the Ohio River.

TABLE III. VALUES OF BYPRODUCTS OF COAL NORTH AND WEST OF OHIO RIVER

Gas	$0.20 per 1,000 cu.ft.
Tar	.04 per gal.
Benzol	.20 per gal.
Ammonium sulphate	.025 per lb.
Coke	8.05 per net ton
Ash	—.01 per unit

The value of coke is based on a net cost of coal at the mine of $2.50 per net ton, an average freight rate of $3.05 per ton, and 1.45 tons of coal per ton of coke. The value of ash per unit is based on the above figure plus a reasonable charge for its handling and disposition.

From these figures Table IV was computed:

TABLE IV. VALUES OF COALS FOR BYPRODUCT PURPOSES

Item	Kentucky	West Virginia	Pennsylvania
Gas	$1.01	$1.01	$1.10
Tar	.31	.32	.31
Benzol	.52	.52	.44
Ammonium sulphate	.70	.61	.63
Coke yield	5.60	5.86	5.44
Ash content	— .04	— .05	— .07
	$8.10	$8.27	$7.85

In the above figures no account is taken of the lower sulphur and phosphorus content of the southern Appalachian coals, nor of the fusing points of their ash. At many places the low sulphur would allow the admixture of some of the washed Illinois coals, which, on account of the lower freight rates, would be cheaper, and still yield a good metallurgical coke. The importance of the fusing point of coal ash is just beginning to be realized, as the clinkering and resultant higher operating cost of the coals possessing an ash of low fusing temperature is quite noticeable. It is, therefore, highly probable that many coke plants in the near future will give a decided preference to the coals having ash possessing high fusing points, even if otherwise they are not quite so good.

In addition to the qualities considered above, the eastern Kentucky and to a lesser extent the West Virginia coals usually mine with a large percentage of lump. This is a decided advantage in gas making and also enables these coals to enter the domestic market successfully. Taking all of these facts into consideration, it can easily be seen that the coals of eastern Kentucky are surpassed by none and equalled by few in this country.

Possible to Clarify Black Washery Water And Save Coal by Electrical Action

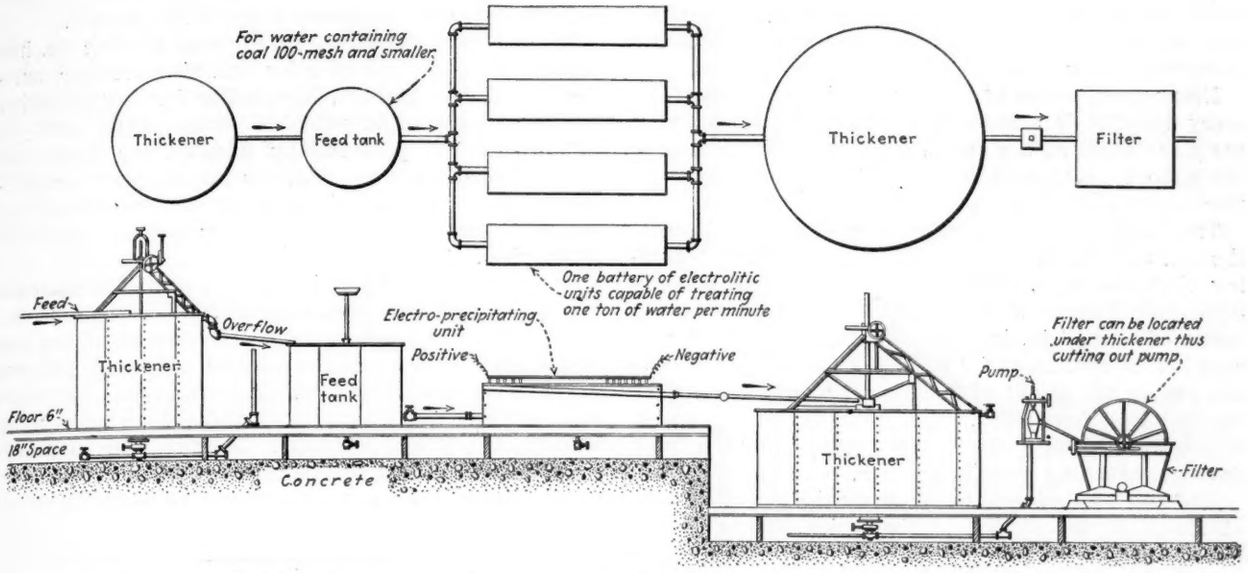
THAT water leaving breakers and washeries throughout the anthracite region is laden with fine particles of coal has long been well known. While this fine material contains a definite and readily determinable fuel value it has been difficult if not impossible in the past to reclaim it. The amount of such material carried away and lost yearly is so large as to be almost unbelievable.

About 310 breakers are in operation in the anthracite region. Assuming that each plant uses on the average 1,500 gallons of water per minute (many of them use twice this amount), this gives 465,000 gallons of wash water per minute, or 930,000 tons of water per day of eight hours. As this water carries on the average 20.18 grams of fine coal ranging from 150- to 2,000-mesh per liter, equivalent to 40 lb. per ton, the total loss of this material throughout the entire region amounts to 18,600 tons per day. In addition to this extremely small coal, which is an almost ideal fuel for burning in the powdered state, each ton of water thus used carries about 100 lb. of coarser material readily utilizable for briquetting, or, in other words, 18,600 tons of fines will be recovered in addition to 46,500 tons of coarser coal, thus making a total daily recovery of 65,100 tons of valuable coal, practically all of which now flows down stream as waste matter. All that is necessary in order to render both these products available for the purposes mentioned is recovery and drying.

Tests have recently been completed under the supervision of the Pennsylvania Department of Health that demonstrate that this huge loss can be avoided and the fine material recovered from the wash water before it leaves the collieries. Furthermore the water clarified may be used over and over again if desired, or it may be discharged to any stream or watercourse as clear as ordinary drinking water, as practically all solids have been thrown out of suspension.

This process of clarification is electrolytic and almost entirely automatic. Three men can operate a plant capable of treating 6,000 gallons of water per minute. The cost of current employed in precipitating the solids does not exceed 20c. per ton of coal recovered. An idea of the simplicity of the plant necessary may be gained from the accompanying illustration, which shows a one-battery installation.

The operation of such a plant is as follows: The colliery discharge is first passed through a thickener that removes the coarser particles. The overflow from this machine, carrying the fines, is then passed continuously through the electrolytic precipitation units and thence to a second thickener, which discharges the fines in a thickened pulp ready for filtering and drying. Overflow from the second thickener is clarified water,



PLAN AND ELEVATION OF APPARATUS FOR CLEANING COAL-LADEN WATERS ELECTROLYTICALLY

By removing the coal from washery waters three results are attained: clean water for breaker use, avoidance of suits for injury to property and coal for steam raising. This method of clarification has been applied with success to other mineral substances than coal. The cost of the current for the recovery of the coal is 20c. per ton. Even if the coal were worthless when recovered the installation would justify itself in the obtaining of clear water that can be re-used or wasted to natural streams.

the clarification being 100 per cent complete if this machine is covered so as to prevent absorption of foreign matter from the air.

This process if applied generally would accomplish several things, the more important of which may be summarized as follows: An entirely new product (powdered coal) would be recovered, the national fuel supply would be conserved because of the saving effected in a product now going to waste, the cost of the material thus reclaimed would be comparatively slight, so that manufacturers using this fuel could turn out a cheaper finished product; the present black streams common to the coal regions would be superseded by streams of clear water and coal operators could thus escape all liability for pollution of natural watercourses, which in the past and even yet is the cause of much difficulty.

The tests above referred to were conducted at the Old Forge plant of the Pennsylvania Coal Co. The results obtained were significant and show a clear portent for the future.

The tests were made Aug. 16, 1921, in the presence of Messrs. Daniels and Long, assistant engineer and chemist, respectively, of the Department of Health. These officials took their own samples and C. A. Emerson, Jr., chief engineer, makes the following report based on their observations and examinations:

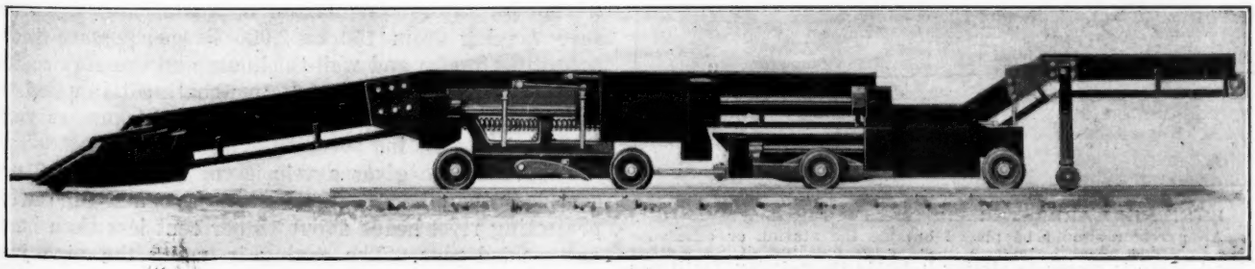
Time of run	7 minutes
Average voltage	5.7 volts
Average current	15 amperes
Volume treated	47 liters, or 12.42 gallons
Suspended matter	20.18 grams per liter, or 168 pounds per thousand gallons
Current consumption	0.8 kw. per thousand gallons, or 9.5 kw. per ton of solids
Supernatant water	Clear, that is, practically all the suspended matter was removed.

Self-Propelling Coal Loader Designed with Only 28-in. Clearance Above Rail

THE loader illustrated is built to work in a 9-ft. mine entry and will operate on a curve of 9-ft. radius. Its simplicity and standardization of construction are strongly urged in its favor. The shovel mechanism is positive in getting coal on the conveyors, which are of the roller type, specially patented. They bring the coal from the face and dump it into mine cars with minimum breakage.

The mechanism is identical with that used on steam shovels, cranes, dredge boats, gun mounts and steam winches, and should therefore be in accord with correct principles. The operation of the machine is simplified by having three motors all of the same size, each motor being thus interchangeable. None of them is reversible. All reversing is done by positive mechanical means.

Four levers control the whole machine. The loading boom can be swung in a radius of 180 deg.; the shovel can be raised and lowered and the boom sent forward



COAL LOADER WITH LOADING BOOM ADJUSTABLE AT ANY POINT IN A SEMICIRCLE

The machine is designed with three motors all of the same size and interchangeable. Roller-type conveyors carry the coal from the face to the car. Being low it can be used in thin coal.

or backward 42 in., concerted action of all motions being effected at one time. These levers can be operated from either side of the machine, making it suitable for operation in low coal.

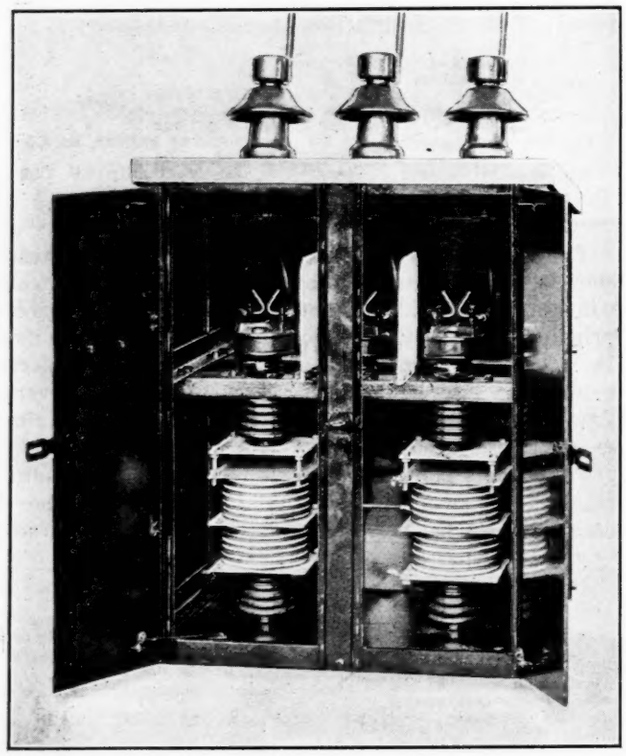
Every gear, worm and screw is of a standard size; every bearing is standard; all castings and machine parts are made of the best manganese and nickel steel throughout, making it difficult to break or injure the machine at any point.

The machine is at no point more than 28 in. above the rail and it will carry 10 in. of coal without exceeding that clearance. Where the roof of the mine is 3 ft. above the top of the rail, this machine will handle lumps of coal 16 in. in diameter and at the same time have a roof clearance of 2 in. Each conveyor is adjustable to suit the height of the mine car being filled. The machine is self-propelled, traveling under its own power at a speed of 200 to 300 ft. per minute along the track from one working place to another.

The first machine will be tested by the New River Co. at Mount Hope, W. Va. This device, known as the Auto Moto Coal Loader, was designed by L. C. Pritchard and his associates for the Auto Moto Manufacturing Co., of Charleston, W. Va., under the supervision of Harry F. Randolph, a consulting engineer of Pittsburgh, Pa.

By Putting Oxide-Film Lightning Arrester In Case, Short Spark Gaps Can Be Used

ELECTRICAL apparatus is designed and built so that it furnishes in itself protection from damage under ordinary operating conditions. But against one serious hazard, namely, lightning, some external means of protection is necessary, though too often none is provided. Sufficient insulating strength cannot be built into the apparatus to guard it from this danger.



LIGHTNING ARRESTER PROTECTED FROM WEATHER

An arrester should be placed outside the station or otherwise the lightning when it strikes will enter the building. On the other hand, there is reason in placing it inside the building, for it has to be protected from the elements. Otherwise it must have excessively wide spark gaps which rain, snow and sleet cannot bridge. By using a steel box, as above, both requirements are fully met.

To meet such conditions the General Electric Co. has developed a new type of oxide lightning arrester, suitable for outdoor use and intended to furnish protection to lines whereon the potential ranges from 1,000 to 7,500 volts. It is especially adapted for protecting isolated low-voltage transformer installations, generating stations or substations where lack of attendance or insufficiency of space make other types of arresters impractical.

The new arrester consists of a stack of oxide cells totally inclosed in a steel case which also contains the spark gaps. This allows the same settings of the gap to be used outdoors as would be employed indoors, insuring high sensitiveness. These arresters are made for platform mountings, the sizes and weights being such that installation is easy. They require no charging, all the attention needed being inspection after electrical storms and a semi-annual test to make sure that they are in good shape.

Hammer-Weld Pipe Stronger, More Efficient And Less Costly to Put in Place

HAMMER welding has been adapted to the manufacture of large pipe. Its simplicity, its strength, its freedom from corrosion and its smoothness make the lap weld superior to the riveted joint. Hammer-welded pipe is made by bending a steel plate into tubular form with the edges overlapping and then welding the overlapped edges by hammer-forging them on an anvil block supported on a horn inside the pipe.

This process is particularly well adapted to the manufacture of sizes from 24 to 96 in. in diameter, which indeed exceed in general those which are used for water and steam lines around coal mines. The National Tube Co., of Pittsburgh, Pa., which makes this pipe, uses open-hearth steel and obtains the tubular or cylindrical form by bending the plate, either hot or cold—depending on its thickness—in much the same manner as plates are bent for boiler shells. The plates in this case, however, are curled over till the edges overlap.

The rough tube thus obtained is taken to the welding machine, where a short section of the overlapped edges is heated to a welding temperature by water-gas burners, placed opposite, inside and outside the pipe. After reaching the right temperature the heated portion of the seam is hammer-forged on an anvil supported by a long counterbalanced beam, after which the contiguous portion is heated and welded. These alternate heatings and weldings are continued along the entire length of the pipe. After this the pipe is annealed so as to remove strains and refine the grain of the metal. The pipe is then straightened, inspected, and the ends trimmed. After being tested hydrostatically by pressure varying from 150 to 2,000 lb. per square inch, according to size and wall-thickness and the service for which it is intended, a protective coating is applied, if this is desired by the user. The wall-thicknesses vary from ¼ in. to 1½ in.

Cast-iron pipe gives a velocity of flow about 10 per cent less than hammer-weld steel pipe and pipe with projecting rivet heads about 18 per cent less than hammer-welded pipe. The saving in using the pipe just described is that with decreased resistance smaller diameters can be employed, as the greater speed of flow

permits of thinner steel walls. The use of a weld having greater strength than any riveted seam permits higher working stresses, which again reduces wall-thickness. There is no excess weight due to overlapping of material and to rivets except in certain types of girth joints. After erection there is no trouble from leaking seams with resulting corrosion and damage to foundations. Where tunnels are to be made for the pipe they can be made smaller. Expansion joints are simpler than with riveted pipe and the protective coating is more easily applied and less of it is required as there are no rough riveted joints to be covered.

A lap-welded smooth interior-coated pipe need only be 85 per cent as large in cross section as a riveted pipe to furnish the same quantity of water under the same conditions. The head lost by friction will be only 70 per cent as great as is the friction head for a riveted pipe which will deliver the same quantity of water. Other classes of pipe have friction losses greater than lap-welded pipe but, in general, less than riveted pipe.

The joints may be made without flanging the pipe ends, but where the pipe cannot be laid straight bell-and-spigot joints may be made, either with or without reinforcement. Bolted rings may be put around the bell-and-spigot joint, the whole so disposed as to bring pressure to bear on the lead jointing material. Regular or tapered bump joints may be used either with single or double riveting. Furthermore, for light pipe walls, the ends may be flanged and joined together, being held by bolted rings. Angle rings may be riveted to the pipe ends, the rings being held together by bolts, or flanges may be welded on the pipe ends, the flanges of adjacent pipe being held together by bolts, with or without loose flange rings. Expansion joints and spherical bump joints are other alternatives where expansion or an angle in the pipe is desired.

Scientific Method Yields High Degree of Precision with Large Capacity Scales

THE accuracy that can be obtained from large weighing scales is not generally known among engineers and others concerned in the subject. Technologic Paper No. 199 of the Bureau of Standards, by C. A. Briggs and E. D. Gordon, outlines a scientific and systematic procedure for the accurate test of large capacity compound lever scales by a method which has been developed and used by the Bureau of Standards largely in connection with its work in testing railroad master track scales and grain hopper scales, but the plan can be adapted to the test of almost any compound lever scale.

A pointer and graduated scale are arranged for reading the position of the beam; and the errors of the scale are determined from observations made upon the beam while it swings freely. The method of recording data and of determining the results is very similar to that which has been in use in laboratories for precision weighings on fine equal-arm balances. The method of taking and recording the data also tends to eliminate the personal equation, to point out where mistakes are made, when such occur, and gives a complete record of the test which will present understandable and detailed information to anyone who has occasion to make a critical study of the test.

The method is not suggested for use in the regular routine testing of ordinary compound lever scales, where precision results are not required. The method given here requires the observance of certain details consistent with realizing precision and requires training and ability to a greater extent in those making the test than is required in the ordinary case.

The procedure of the test is explained with the aid of a record form and computation sheet which was developed in connection with the successful application of the method in the field. In the interest of a uniform and efficient method the scheme outlined is recommended to those who have occasion to carry out tests on large scales where accuracy of a high order is required.

Automatic Doors and Switches Will Reduce Power Consumption Greatly

THE power exerted in starting a trip until it gets up to normal speed is at its peak 500 amperes or over. A fair average from start to normal speed would be somewhat over 240 amperes for a period of two minutes or more, depending on the length and weight of the trip. Using 250-volt direct current, the energy consumed would be 60 kw. for a period of two minutes. Stopping for doors and switches consequently is an important source of power loss. If thirty trips a day stopped at a door or switch, that arrest of motion would involve a waste of 60 kw.-hr.

Where many such doors are to be passed the waste will be proportionately greater. Placing boys at such places is a dangerous way of rectifying the difficulty, for no reliance can be placed on them. So also is the practice of having brakemen run ahead of the motor to throw the switches or open the door. An automatic door can be built and maintained at a charge equivalent to 15c. a day and an automatic switch is relatively inexpensive. During the war the street car companies tried to reduce the frequency of stops with the idea of saving power. A like economy should appeal with equal force to the mine manager.

HOW STRONG IS A ROPE?—At the Bureau of Standards laboratories in the Department of Commerce, tests have been made that have resulted in answering that question with a formula.

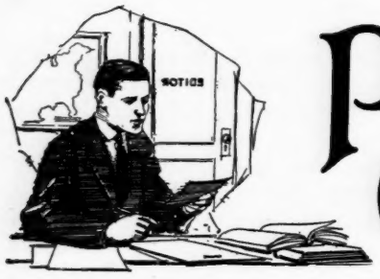
For three-strand regular lay manila rope from ½ to 4½ in. in diameter, the following computation will give the breaking load of the rope: The average breaking load in pounds equals 5,000 multiplied by the diameter of the rope in inches, multiplied by the diameter of the rope increased by one. This will give, of course, the average maximum weight that the rope will hold, but the working load or the load that a contractor or safe-hauler may apply with proper safety and precaution would be considerably less than the load given by the formula.

Other data on rope are contained in Technological Paper of the Bureau of Standards No. 198, by A. H. Stang and L. R. Strickenberg, which has just been issued.

IT IS ESTIMATED that there is enough coal in discovered fields to keep miners striking for 3,276 years.—*Fresno Republican.*

THE THING THAT TROUBLES the country is not only the unemployment of the idle but the idleness of the employed. —*Chicago American Lumberman.*

WEST VIRGINIA WILL NOW HAVE to get busy and mine and sell a little coal in order to lay in a supply of winter ammunition.—*Brookyn Eagle.*



Problems of Operating Men

Edited by James T. Beard

Why Shoot Coal Off the Solid

Solid Shooting Applied Locally—Safety the First Consideration—Machine Mining vs. Solid Shooting—Question of Relative Economy and Cost of Equipment

AFTER reading the several opinions regarding the shooting of coal off the solid, expressed in the letters that appeared in *Coal Age*, Oct. 20, p. 645, I feel prompted to ask if there are not adequate reasons for the continuance of this practice when local conditions make it safe.

Most all men, in expressing their views on different subjects, are largely guided by their observance of local conditions and results. That being the case, it goes without saying that such opinions are worthy of consideration locally. It is not assumed that they would necessarily apply to conditions in other localities that would render the same practice unsafe.

In Alabama a great deal of coal is still being shot off the solid and the same is true in other states. In considering this practice there is no question but that safety is of the first importance. It is our experience that where a proper regard is had for all rules, solid shooting is safe. The records here and in other states confirm this belief.

Mines Shooting Coal Off Solid Exempt from Explosion

Unfortunately, the State of Alabama has had its share of mine disasters. The fact is significant, however, that of the eight mine explosions in the state, costing five or more lives during the past ten years, not one of them occurred in a mine where solid shooting was practiced. Most all of these disasters occurred in machine mines.

The common or accepted view, no doubt, is that either machine or hand-mining methods are more safe than the practice of shooting coal off the solid. In this locality, "solid shooting" means nothing more or less than shooting coal that has not been undercut or mined.

Now, it is not my claim that solid shooting, without due regard to the recognized rules to make this practice safe, should be followed. My opinion is that the results of solid shooting in Alabama, in respect to safety, are due largely to the close supervision given to the work, by mine and state officials.

On first thought the question of solid shooting would seem easy to analyze; but, after due consideration, one is impressed that there are other matters to be considered in that connection. For instance, a writer from West Virginia (p. 645) deduces from the fact that solid shooting is prohibited by the law of that state except by permission of the mine inspector, that there are conditions under which "it is nearly impossible to mine the coal economically with a pick," and suggests "it could be mined by machine."

In respect to economy of mining, I want to say that the cost-sheet of many machine mines will show a higher expenditure per ton of coal mined than is the case in mines where solid shooting is practiced. Machine mining entails many items of expense not known in solid shooting.

Machine Mining vs. Shooting Coal Off the Solid

I have in mind two operations—one in which machine production prevails and the other where solid shooting is the practice. The differential between these two mines is 14c. per ton. The machinemen and their helpers are paid 13c. per ton, for undercutting the coal, which leaves a margin of only 1c. per ton to cover maintenance of machines and cables, replacement of parts worn or broken and power to operate. In many cases, these charges average 6 and 8c. per ton.

There is one advantage that machine mining has over solid shooting; but to my mind it is certainly a doubtful one. I refer now to the quality and quantity of the output. However, since both of the companies to which I have referred sell their product in the same market and at the same price, it does not appear that there is any real benefit realized by the machine mine, at least from an economic point of view.

Let me now refer to an aspect of the situation that is not apparent to many. We know that every progressive mining man filling the office of mine inspector, superintendent, foreman or engineer, from time to time, has cherished the ambition that some day he will be able to enter the business as a coal operator himself.

Solid Shooting Requires Smaller Investment of Capital

When one considers the amount it is necessary to invest in the equipment of a machine mine, in order to provide the necessary boilers, generators, condensers and machines, he is led to ask, what chance have these men to ever establish a business of this kind with their limited amount of capital, which would be practically exhausted in the purchase or leasing of a coal property.

Certainly, for the small man, starting out in the mining game, the proposition of machine mining is not attractive. Instead, he is led to choose the plan that promises the smallest initial outlay. It is this phase of the question that has appealed to me in connection with the discussion of eliminating the practice of shooting coal off the solid. Let us hope that no undue influence or interference will be used to change our present laws in this respect.

Clinton, Ala. WILLIAM CROOKS.

Sharp Tools in Every Miner's Working Place

Reducing accidents from roof falls at the face—Cutting timbers to exact size not a practical solution of the problem—All miners to have sharp tools and use them—Discipline needed—Good workmen are known by their tools.

ACCIDENTS from falls of roof and coal at the face are ascribed as largely due to the dull axes and saws of miners, in the letter of J. H. Taylor, *Coal Age*, Sept. 22, p. 460. Recommendations offered with a view to prevent accidents at the working face, in mines, are always timely and, if practicable, should be put into effect at once.

That dull tools are responsible for a large number of accidents, by reason of working places not being promptly and suitably timbered, there can be no doubt. I have particularly observed that the miner who keeps his timbering tools well sharpened always has his working place properly timbered, and as a result, escapes the many accidents that befall his fellow workers.

The suggestion Mr. Taylor offers, however that cutting mine timbers to the exact lengths required in the several working places will prove a means of reducing the number of accidents from falls of rock and coal in those places does not appeal to me as a practical solution of the problem. The result would be that, eventually, few miners would have an ax or saw, in condition to be used, in their places.

Difficulties Encountered by Cutting Timber to Measure

Most miners are incapable of taking exact measurements for the timbers they need. Again, there would be endless confusion when drivers attempted to deliver these various sizes where they are wanted. The stockkeeper, in the timber yard, would be burdened with duties as complicated as making out an income tax return.

It does not require a great stretch of imagination to see that John Jones would receive the 6-ft. 3-in. timbers ordered by Jack Smith; and the 5-ft. 11½-in. timbers needed by Jack would require some hunt to locate their whereabouts. If Smith received timbers one or two inches too long, he would require as sharp an ax or saw as if 6-ft. or 6½-ft. timbers had been sent him, after the usual custom.

In my opinion, the proper remedy to apply, in an effort to reduce accidents

arising from the failure of miners to properly timber their places, is to see that all miners have sharp axes and saws in their places and use them. The mine foreman should insist on each miner providing his own tools and keeping them in condition for use. He should hold the miner responsible for the timbering of his place and his own protection.

Discipline Needed to Avoid Accidents at Face

At times I have worked beside men who borrowed an ax or saw whenever they needed these to cut a timber; and you can be sure that they never timbered their places until compelled to do so by the foreman. Had the foreman kept after these men continually they would, in most cases, have gotten their own tools rather than continuing to borrow from their neighbors.

Just here, let me say, one important thing needed in every mine, if accidents at the face are to be avoided, is discipline. Bear in mind the fact that where there is good discipline it will seldom happen that the working places are not properly timbered. It is up to all mine officials to maintain this discipline.

Careful inspection of every place should be made by competent men at frequent intervals, while the men are at work. The condition of the roof and coal and the amount and kind of timber on hand should be carefully noted. The prompt delivery of timber at each working place must be the rule.

In closing, let me say that, in coal mining as in other callings, a good workman is known by his tools. A miner cannot cut coal with a dull pick; neither can a timberman perform his work with dull axes and saws. Then, if face accidents are to be prevented there must be sharp tools in every working place. Safety-First.

Thomas, W. Va.

Observations in a Model Mine

Surface and underground arrangements cause admiration—Increased safety, efficiency and economy afforded—Standard switches expedite work of tracklaying—Company inspectors employed.

READING the excellent letter of R. W. Lightburn, under the caption, "Model Room Switches," *Coal Age*, Sept. 22, p. 460, leads me to describe briefly what I saw on a recent visit to what may well be called a "model mine."

This mine is located in Cambria County, Pennsylvania. On approaching the place, the first thing that attracts the eye of the visitor is the neat and orderly arrangement of the timbers and other material stored in the supply yard. The yard is located convenient to the railroad tracks, so that there is no delay in unloading the smallest shipment of material or the largest locomotive used in the mine.

Arrangements on the Surface and Underground

Next, one is greeted with the pleasing appearance of all surface buildings, including the company offices, power plant, repair shops, all of which are built of brick or other fireproof material. The drift mouth of the mine is walled and arched over with quarried rock and, for a distance of 200 ft., the roadway leading into the mine is arched with brick and whitewashed.

Passing into the mine, one is pleased to observe ample shelter holes, which are also well whitewashed. At this mine, a standing order provides a suitable reward to all miners who will promptly remove any obstruction or refuse they may chance to find in a shelter hole and report the fact promptly to the mine foreman.

The main haulage road is built of ample size and all tracks and rolling equipment are designed to carry a maximum load, with the least possible chance of a breakdown or derailment of cars. The roads on the cross-entries are laid out with the same care. The effect of these arrangements is to reduce the cost of haulage to a minimum and provide a maximum efficiency.

One point worthy of mention is the standard form of room switch provided. The lead rail and frog attached form one solid piece, which greatly facilitates the laying of these switches. Where only cars and cutting machines are required to pass over the switch a No. 1½ frog is used; but a No. 2 frog is laid where locomotives must enter the rooms.

Tracklaying Expedited by Use of Thirty-Foot Rails

All rooms are turned on 60-ft. centers, and 30-ft. rails are used exclusively, in laying track on these headings. This arrangement greatly expedites the work of tracklaying, as there is no need to cut any rails. One tracklayer and helper can easily lay from three to five room switches a day. All the switches have point rails, with switch-throws located 3 ft. from the rail, thus combining safety and efficiency.

It is the custom in this mine for each miner to order the length of timber and number of posts and caps required. These are sent into the mine and delivered to his working place. The posts are already cut and squared to the required length, which saves the miner much valuable time, increasing his earning capacity and, incidentally, enlarging the output of the mine.

On the haulage roads, no material is allowed to obstruct the clearance side of the track, at any time. All trolley and feedwires are carried on the opposite side of the road. When necessary to store material in the entries, this must be kept in a crosscut and the wires crossing the opening must be protected.

If material is stored in a roomneck, there must be kept a clear space of 8 ft. between such material and the roadway. All cross-entries are driven 6 ft. high in the clear, and clearances of 4 ft. on the manway side and 3 ft. on the wire side of the track must be provided.

Safety Inspectors Employed

The company employs a private inspector, who devotes his entire time to matters pertaining to the safety and efficiency of operation. In this connection, it may be said that more is required by this company inspector than the state law specifies, notwithstanding the completeness of the Bituminous Mine Law, in matters relating to safety. All machinery and rolling stock are kept in the best condition possible, and the more important machines are maintained in duplicate to avoid a loss of time in case of breakdown.

At this mine, employing an average of 1,000 miners, the cost of production, per ton, is considerably less than at most mines. Although roof conditions are very bad, the coal low and steep grades endanger the haulage roads, the accident rate in the mine is very low. There is the best of co-operation between the mine superintendent and foreman, and a good spirit prevails throughout the organization. Improved machinery and methods of mining are given a thorough trial, the officials being open to suggestions at all times.

Johnstown, Pa. Reader.

Value of Certification Law Appreciated

Decade of mine disasters in Pennsylvania—Thirty years of certification, 1885-1915 — Operators and mine workers need the protection afforded by old law—Its value shown by employment of certified men by large corporations.

THAT mining men, both employer and employee, require industrial protection in respect to life and property is plainly evidenced by the many mine disasters that have occurred in the history of coal mining. Few doubt that such protection is best afforded through the operation of the certification law properly enforced.

Uncertified mine foremen, assistant foremen and firebosses have had their day in Pennsylvania. No doubt they did their best, but their lack of technical knowledge of mining principles and problems has proved an insurmountable obstacle to their continued employment, by operators who consider the safety of their men and the security of their property of the first importance.

Certification in Pennsylvania

If one has any misgiving in regard to the practical value of a law requiring the examination and certification of candidates for positions of responsibility in the operation of mines, he needs but to refer to the history of that law and its revision, in Pennsylvania.

From a list of coal-mine disasters of the last decade (1911-1920), in which five or more lives were lost, which was recently prepared by the Bureau of Mines (Technical Paper 288, p. 29), it appears there have occurred a total of 99 such disasters in the United States during that period.

It is interesting to note that of this number 29 of these occurrences, or 29.3 per cent of the total, have occurred in the State of Pennsylvania. The list shows the total number of deaths, in these disasters, to be 2,441, of which 531 deaths, or approximately 21.7 per cent are ascribed to Pennsylvania.

If the same proportion of disasters and deaths, in the coal mines of Pennsylvania, was in evidence during the fifteen years, from the enactment of the first mining law in that state, in 1870, to the passage of the certification law, in 1885, it is no wonder that public sentiment compelled the state legislature to set the standard, by requiring the examination and certification of all mine foremen and firebosses by state examining boards.

Since that time, thirty years of certification (1885-1915) have established beyond a doubt the value of such legislation. That the need of this law was recognized by expert mining men has since been proven by its general inclusion in mining legislation in most

of the coal-mining states, to say nothing of its forming an important feature in the mining laws of Great Britain and their recently adopted code.

Most of our coal-mining laws state specifically that the purpose of the law requiring certified mine officials is to provide for the health and safety of persons employed in the mines and insure both the protection of property and the more efficient management of operations underground.

No one doubts that both operators and mine employees need the protection of this law. The operator needs the law to protect him from his plum-seeking friends who are unwilling or unable to obtain the necessary certificate. The worker underground needs protection from the employment of incompetent bosses, on whose knowledge and judgment they must rely for safety.

Large Operators Appreciate the Value of Certification

That the value of the law is appreciated by the majority of coal operators is clearly shown by the fact that large corporations will employ no uncertified man in a responsible position. Many choose certified men, by way of preference, when filling positions where the law does not require certificates.

It is hard to understand what influences were brought to bear on the Pennsylvania legislators, in 1915, to induce them to revise the old law, by inserting a clause that practically nullified the requirement of examination and certification of mine foremen and firebosses in the state.

In authorizing the mine operator to use his judgment in the selection of men for these positions, as does the revised law, the legislators have set aside the judgment of the state examining boards, which is still retained as a feature of the law. It would seem that the requirement of certification should have been removed from the statute when the other clause was inserted, as it practically renders the work of examining boards unnecessary when the judgment of the operator is made a substitute provision.

Revised Pennsylvania Law an Anomaly

Candidly speaking, one is forced to the conclusion that the revised law is an anomaly. I do not claim that all uncertified men lack the ability to make successful mine foremen. That is quite possible, under certain conditions, where one's lack of technical knowledge is supplemented by an engineering department charged with the supervision of all underground operations, including the ventilation, drainage and haulage systems.

Neither is there any doubt but that there are some timid, unassuming certified men who can never make successful foremen, owing to their lack of executive ability and the power to organize and handle men. They may have the technical knowledge required for safe mining, but would be unable to get results, in the operation of the mine, because of their lack of practical experience.

Such considerations, however, do not represent average conditions. They are the exception and not the rule and form no argument against the certification law in coal mining.

Bayview, Ala. John Wall, Sr.

Inquiries Of General Interest

Standard Weights and Measures of Coal

Average Weight of Bituminous Coal (Run of Mine), per Cubic Foot—Standard Bushel, for Measurement of Bituminous Coal, in Pennsylvania—Cubic Feet per Ton and Equivalent in Bushels

KINDLY permit me to ask for information regarding standards for the measurement of coal in the Pittsburgh seam, assuming the coal to have an average specific gravity, or weight per cubic foot. A difference of opinion has developed in regard to what are the correct answers to the following questions:

1. Assuming an average specific gravity of the coal in the Pittsburgh seam, what should be the weight per cubic foot of run-of-mine coal, in that seam? 2. How many cubic inches are there in a standard bushel? 3. How many cubic feet of run-of-mine coal are there in a short ton (2,000 lb.) and what is its equivalent in bushels?

Avella, Pa. Inquirer.

The average specific gravity of bituminous coal may be taken as 1.3, which makes its weight, per cubic foot of solid coal, $1.3 \times 62.5 = 81.25$ lb. Much will depend on the size to which the coal is broken; but it is common to estimate run-of-mine coal (bituminous) as weighing 50 lb. per cu.ft. On that basis a short ton of this coal would occupy $2{,}000 \div 50 = 40$ cu.ft. (Mine Gases & Ventilation, p. 399).

For general purposes, the standard bushel, in the United States is the old Winchester bushel, which is a circular measure 18½ in. in diameter and 8 in. deep, and contains $8\ (0.7854 \times 18.5^2) = 2{,}150.4$ cu.in. (Mine Gases & Ventilation, p. 400). Estimating on this basis and allowing 40 cu.ft., per ton of run-of-mine coal, the number of bushels, per ton of this coal, is $(1{,}728 \times 40) \div 2{,}150.4 =$ say 32 bu.

Standard Bushel of Coal in Pennsylvania

However, this standard has been slightly modified by the laws in different states. For example, in Pennsylvania, the standard bushel of bituminous coal, by act of legislature effective Jan. 1850, contains 2,688 cu.in. The same act makes the weight of this bushel 76 lb. Two years later an act was passed legalizing the weight of a bushel of bituminous coal, in the borough of Greensburg, County of Westmoreland, at 75 lb.

Taking the legal weight of a bushel of bituminous coal in Pennsylvania as 76 lb., the number of bushels in a short ton would be $2{,}000 \div 76 = 26.3$ bu. Again, estimating on a bushel containing 2,688 cu.in. the number of cubic feet per short ton of bituminous coal in Pennsylvania would be $(2{,}688 \times 26.3) \div 1{,}728 =$ say 41 cu.ft. per ton, run-of-mine.

Summing up briefly, it may be stated that, in Pennsylvania, a short ton contains 26⅔ bushels of run-of-mine, bituminous coal, weighing 76 lb. per bushel. (Law Concerning the Weights and Measures of the United States, Bureau of Standards, 1904, pp. 335, 336, 340).

Force of Hammer Blow

Force of blow struck by a power hammer determined by the estimated energy stored in the hammer and the distance through which the blow is effective.

SOME time ago I filed a clipping taken from *Coal Age* (Vol. 13, p. 984), relating to the method of estimating the force of a blow struck by a hammer. In that case a 2-lb. hammer was assumed to strike the head of a nail, with a velocity of 10 ft. per sec. It was calculated that the energy stored in the hammer at the moment the blow was struck is

$$\frac{Wv^2}{2g} = \frac{2 \times 10^2}{2 \times 32.16} = 3.109 \text{ ft.-lb.}$$

We are anxious to determine the striking force of each one of our Little Giant Power Hammers. For example, one of these hammers is a 25-lb. ram, which travels at a velocity of 8 ft. per sec. and hammers metal with practically no elasticity or compressibility. What we desire to ascertain is the force of the blow struck by this and other hammers. O. M. Hatcher,

Vice-Pres. & Gen. Mgr.

Mankato, Minn. Little Giant Co.

A moving body, in a mechanical sense, is said to possess a certain energy or capacity for performing work, which is expressed in foot-pounds. Thus, the energy of a 25-lb. ram, moving with a velocity of 8 ft. per sec., has an energy of $\frac{1}{2}(25 \times 8^2) \div 32.16 = 24.875$ ft.-lb.

Now, if it is desired to find the force represented by this energy in the performance of work, in any given case, it is necessary to first ascertain the effect produced when the energy is consumed. In the case of the hammer, the energy is consumed when the blow is struck. The work performed, being expressed in foot-pounds, is the product of the force of the blow, expressed in pounds, and the distance passed through in bringing the hammer to rest, expressed in feet.

If we were to assume that there was no elasticity or compressibility in the metal struck, the force of the blow would be infinite. It would be the case of an irresistible force striking an immovable object, and the energy would be completely transformed into heat.

Considering the case from a mechanical point of view, however, there is

always a certain elasticity or compressibility when metal is struck by a power hammer. In order to estimate the force of the blow delivered by the hammer, it is necessary to measure or estimate the very slight distance through which the blow is effective, as determined by the elasticity or the compressibility of the metal struck. This may be a ten-thousandth of a foot, more or less, in which case the force of the blow would be 24.875 ÷ 0.0001 = 248,750 lb., or say 124 tons.

It will be readily seen that the estimated force of the blow depends primarily on the compressibility or elasticity of the metal struck. This solution, however, takes no account of the portion of energy transformed into heat and absorbed by the metal.

Examination Questions Answered

Alabama First-Class Examination, Birmingham, July 25-28, 1921

(Selected Questions)

QUESTION—*Should the main opening to a mine and the air-course be of the same size? If not, which should be the larger, the intake of the return? Answer fully.*

ANSWER—The main opening should be at least as large, or have as great a sectional area, as the air-course through which the current is entering the mine. In general, as far as the circulation of air is concerned, the return air-course should have a somewhat greater sectional area than the intake airway. But where the intake airway is made the haulage road, the conditions relating to safe haulage, the obstruction of the air current by loaded and empty trips passing out and into the mine, and the providing of a safe clearance at the side of the track may necessitate a larger sectional area on the intake than is required in the return airway. The volume of the return air current is generally larger than that entering the mine because of its higher temperature, the addition of mine gases and the expansion of the air owing to the release of the pressure due to the mine resistance. All of these conditions must be carefully considered in determining the relative size of the intake and return airways in a mine.

QUESTION—*In a mine employing a continuous air current for ventilation and the air-courses where the use of timber is necessary for support of the roof, how would you instruct your men in reference to working their rooms? Would you use the same method on the split system? Explain.*

ANSWER—The meaning of this question is very obscure. It would seem that the aim is to ascertain what difference there is, if any, in the instructions given to the men with reference to the working of their rooms, in a mine ventilated by a single continuous current, and in another mine where the current is divided into one or more splits. Attention is drawn to the fact that the nature of the roof is such as to require timber for its support in the air-courses. If this is the meaning of the question, it may be assumed that the use of timber being required in the air-courses would point to a bad condition of the roof generally throughout the mine. In the split system of ventilation, fresher air will be supplied to each working face, than where the air is conducted in one continuous current throughout the mine. Just here, however, we are at a loss to understand how a bad roof condition would alter the instructions given the men, in respect to working their rooms, under a continuous air current as compared to a split system of ventilation. If the roof is bad, the miners must be cautioned to timber the same for their own protection, whether the air is foul or fresh.

QUESTION—*(a) Should the old workings of a mine be ventilated and why? (b) What relation will the air have to old workings by the fall of the barometer?*

ANSWER—(a) The old workings of a mine should either be thoroughly ventilated, or hermetically sealed by building substantial stoppings at all openings leading to the old works. In the latter case, it is necessary to make continual tests of the air in the old workings, at regular short intervals, for which purpose pipes are built into the stoppings and equipped with cocks for tapping the air when desired. The reason for ventilating the old workings of a mine is to prevent the accumulation of dangerous quantities of explosive or poisonous gases within them.

(b) The question probably intends to ask: What effect will a fall of barometer have on the air contained in the old workings in a mine? A fall of barometer indicates a decrease of pressure on the air, and this is followed by an expansion of the air and gases in the old workings. As a result the gas-charged air is forced out onto the entries and into the live workings, making them unsafe and dangerous for work.

QUESTION—*Where there is 2 ft. of slate roof, overlaid with sandstone, what precautions would you use in timbering?*

ANSWER—The method of proceeding, in this case, must be determined by conditions in the mine; but, in general, it may be said that the only safe method to pursue is to take down the 2 ft. of roofslate on all roads and entries. In rooms and headings, the slate must be well supported, for a distance of four or five yards back from the face. As the working face is advanced, however, the rear timbers are drawn and the slate allowed to fall. It is then cleaned up and stored at the side of the road or other convenient place in the mine. Under these conditions, it is necessary to see that the miners in the rooms and entries set the necessary timbers promptly as the face is advanced, keeping the timbers well up to the face, as conditions may require.

QUESTION — *When undercutting a room with a continuous or longwall machine where the roof is so bad that it is necessary to set the timbers within 3 ft. of the face and it requires 7 ft. for the machine to pass along the face, how would you arrange the timbers to cut the place?*

ANSWER — In this case probably three rows of timbers should be kept standing, the first row being 3 ft. from the face of the coal and all posts being set 3 ft. center to center, the posts in each row being staggered. As the machine advances, each post should be temporarily withdrawn to permit the machine to pass and then reset in place. It may even be necessary to use crossbars hitched into the face of the coal, above the machine, but this will only be required in exceptional cases.

QUESTION—*In robbing pillars, where the roof is fairly good, how near the working end of the pillars would you require timbers to be set?*

ANSWER—In any case, when robbing, posts should be set as close as practicable to the end of the pillars, for the better protection of the miners. Conditions alone can determine the distance posts must be set from the face of the pillar.

QUESTION—*What effect has the outside varying weather conditions on the operation of a mine, so far as humidity is concerned; and, in this connection, explain the effect of summer and winter weather?*

ANSWER—When the outside temperature is considerably below that in the mine workings, the air entering the mine holds less moisture, per unit of volume, than it would hold if its temperature was higher, for the same degree of saturation. As a consequence, when the air has become warm, in passing through the mine, its degree of saturation is much lower. In other words, in passing through the mine the air has become drier and is ready to absorb more moisture from the mine. On the other hand, if the outside atmosphere has a temperature above that of the mine, the passage of the air through the mine increases its degree of saturation and renders the air wet, and moisture may then be deposited from the air, in the workings.

The effect of summer and winter, in respect to increasing or decreasing the humidity of the mine air, is quite manifest. In summer, the generally higher and more moist outside air, on entering the mine, is cooled and its moisture may be deposited in the workings, provided the degree of saturation outside is sufficient. On the other hand, in winter, the cold outside air carries a comparatively small amount of moisture into the mine and, being warmed, in its passage through the mine, is rendered much drier. As a result, moisture is absorbed from the workings, which are thereby rendered dry and dusty. It is this condition that makes the operation of a mine generally more dangerous in winter.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

THAT prosperity will not return until a general readjustment of wages and prices has been accomplished is the opinion expressed in the November bulletin of business conditions issued by the National City Bank of New York.

"Taking account of the diminished purchasing power of Europe," the bulletin continues, "its demands upon the United States have fallen very greatly. . . . This loss of purchasing power has affected trade and industry all over the world, and men are intellectually blind who think they can ignore such conditions.

"That certain farm products, such as corn and cotton, will regain some part of the declines they have suffered, may be expected, but there is no prospect of a return of farm products generally to war prices. . . . Any theory that present levels can be maintained for transportation charges and manufactured goods when farm products and raw materials have fallen to pre-war levels is fallacious.

"Broadly speaking, the people in the town industries must sell their goods and services either to the country people or to themselves. It is plain that the former cannot take their usual share at present prices, and the town populations have nothing to gain by holding up the cost of living on themselves. A general reduction of industrial costs would accomplish two very desirable objects, to wit: provide work for the unemployed and lower the cost of living for everybody.

"It is taken for granted as in the interest of the wage-earning class that the well-to-do who are able to continue to pay the present high living costs should be required to do so, but if their living costs were lower they would be able to buy more or invest more (which is the same thing), in either case creating a larger demand for labor.

"The amount of construction work of all kinds is limited today by the amount of capital available. If the wage-earning class absorbs this available amount in half-time work, it will go idle the other half and lose the benefits that would come with an increase of the productive equipment and facilities that minister to the comfort of all the people.

"Until these simple economic truths are comprehended, the present slow, grinding, heart-breaking process of readjustment must continue, with millions out of work and many of them gradually eating up the little savings they had made."

Freight-Car Loadings Fall 9,671

Reduction in the volume of railroad loadings of revenue freight for the week ending Oct. 29 is announced by the Association of Railway Executives. Loadings for the period were estimated at 952,621 cars, or 9,671 cars less than were loaded during the preceding week. The weekly total was 28,621 cars under that for the corresponding week last year, but 17,142 cars in excess of the total for the corresponding week in 1919. Coal loadings were 207,693 cars, or 4,526 cars less than the week before and 15,293 cars under that for the corresponding week in 1920.

Allis-Chalmers Orders Increase

The Allis-Chalmers Manufacturing Co. has felt the recent improvement in business, according to the estimates of new orders booked during the past three months. Figures appearing in the New York financial district show that such orders booked during August aggregated $900,000, while in September they rose to $1,300,000 and last month to $1,800,000.

Production of Steel Ingots Gains

Improvement in the steel industry during October is indicated by the substantial increase in the production of steel ingots during that month. According to returns to the American Iron and Steel Institute furnished by thirty companies which made 84.20 per cent of the total output in 1920 their outturn last month was 1,616,810 tons, as compared with 1,174,740 tons during September, an increase of 442,070 tons.

Automobile Shipments Gaining

Shipments of automobiles during October were virtually on the same basis as for the preceding month, according to *Automotive Industries*. It is added that for the first time since liquidation began shipments will exceed those of the same month of the previous year, and it is believed that from now on the shipments will show gradual improvement over last year.

Railroads Place Equipment Orders

Belief in a "decided upward tendency in traffic" caused the directors of the Chicago, Burlington & Quincy R. R. to decide to buy 7,500 freight cars, 55 heavy freight and passenger locomotives and 127 all-steel passenger cars, Hale Holden, president, has announced. The decision, he said, was made after a survey of the business situation. More than eleven thousand men have been added to the company's payroll to take care of increased traffic since March, Mr. Holden said.

The placing of an order for 2,500 steel gondola coal cars, costing about $4,500,000, is announced by H. E. Byram, president of the Chicago, Milwaukee & St. Paul R.R. Fifty thousand tons of steel will be used in filling the order.

The Illinois Central R.R. has placed an order for 1,000 refrigerator cars, at approximately $2,680 each, according to advices received in Wall Street. Of the total, 350 will be made by the General American Tank Car Corporation and 650 by the Haskell & Barker Car Co.

The Atchison, Topeka & Santa Fe has placed an order for $8,000,000 worth of new equipment. The contract includes the delivery of 2,500 refrigerator cars, divided equally between the Haskell & Barker Car Co. and the American Car & Foundry Co.

Work for Road Makers

The good roads bill, carrying an appropriation of $75,000,000 for road improvements apportioned on maintenance provisions by the states, was signed Nov. 9 by President Harding. The improvements planned are expected to have material effect in relieving unemployment.

Supreme Court Rules Against P. R.R. for Discrimination in Alloting Coal Cars

IN AN opinion by Justice Day the U. S. Supreme Court on Monday, Nov. 7, affirmed the decision of the Circuit Court of Appeals, Third Circuit, confirming an award of $21,094 in favor of Isaac C. Weber, surviving partner of the firm of W. F. Jacoby & Co., assessed against the Pennsylvania R.R. for discrimination in coal-car distribution to mines. Weber, and Jacoby before him, contended that the railroad favored other coal mines, such as the Berwind-White Coal Mining Co., and instituted this action fourteen years ago before the Interstate Commerce Commission. The case had been pending in the courts since then and this was the third time it was before the highest court in the land. The substance of the case and decision follows:

This cause has been the subject of much and long-continued controversy. This is its third appearance in this court. The action is based upon a reparation order made by the Interstate Commerce Commission in favor of the Jacoby company. . . . The second trial in the district court resulted in a verdict and judgment for the plaintiffs for the sum awarded by the commission, with interest. The judgment was affirmed by the Circuit Court of Appeals and the case is again here.

At the last trial the testimony before the commission was put in evidence, with some additional testimony tending to show that plaintiffs had been discriminated against because of the special allotment to the Berwind-White Co. of 500 cars daily, and the sale to it, and to other companies, of a large number of cars in times of car shortage. There was evidence tending to show that but for these discriminations the plaintiffs would have received a sufficient number of cars to furnish them with all they needed during the periods complained of.

The commission in the report condemned the practice of giving to the Berwind-White Coal Co. 500 cars daily by special allotment and the selling of the company's own cars during the same period to favored shippers, thereby diminishing its capacity to supply the coal car requirements of other coal companies along its line. . . .

As there was substantial testimony in the record to support the finding of the commission in awarding damages in a sum at least equal to the amount assessed by it, the principal question to be decided is: May a plaintiff recover in such circumstances in a suit based upon a reparation order of the Interstate Commerce Commission when there is testimony fairly tending to show that recovery was justified because of unfair practices in the distribution of coal cars in times of shortage, which practices, as its report shows, were condemned by the commission, although it may appear that the sum awarded by the commission was actually based upon an erroneous calculation?"

In determining the rule to govern this situation we must bear in mind that the commission is empowered to act upon questions of unfair practices and discrimination. While this is true, when an action is brought upon a reparation order of the commission, as it may be under section 16 of the act to regulate commerce, its findings and order are prima facie evidence of the facts therein stated. Cases cited have disposed of the question of the right of the defendant to attack the prima facie value of the award and have dealt with the nature of the award of the commission in view of the statutory provisions as to its character.

U. S. Labor Department Asks $40,000 for Experts to Help Adjust Miners' Wages

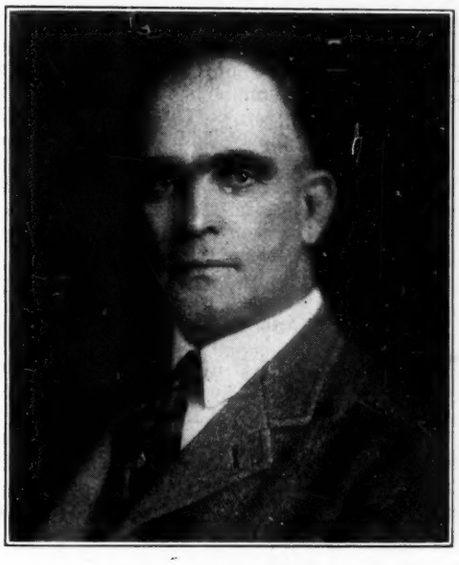
AMONG deficiency appropriations requested of Congress are several of interest to the coal trade. For operating supplies for public buildings, including fuel, $164,000 is requested. In explanation the Treasury says that when estimates for prior appropriations were made there was not taken into account the subsequent increase in the cost of fuel and increased freight rates. An additional appropriation of $12,500,000 for fuel for the navy for the year ending June 30 next is requested, it being explained that the year's requirements for the navy in fuel cover $30,000,000, Congress at the last session having appropriated $17,500,000 after a long fight. Unless the additional funds are granted the activity of the fleet will be reduced materially.

Anticipating a struggle over bituminous coal mine wages next spring, when the present agreement expires, the Department of Labor requests $40,000 with which to employ coal experts to aid in adjusting wages. "It is stated that an opportunity for most helpful work will exist in connection with the contracts of the bituminous coal miners which expire March 31, 1922," says the Department of Labor in explaining the estimate. With these funds the department will assign additional commissioners expert in coal and other basic industries in which agreements expire during the present fiscal year, so as to prevent stoppage of work or at least minimize the effect of any disagreements that may arise in these industries.

F. R. Wadleigh Heads Coal Section of Fuel Division of Department of Commerce

SECRETARY of Commerce Hoover formally announced the appointment Oct. 31 of F. R. Wadleigh, of New York City, to take charge of the coal section of the recently created fuel division of the Department of Commerce.

Mr. Wadleigh has been made chairman of the coal committee of the Federal Purchasing Board, now in course of formation by the director of the budget. It is to be the duty of the board, among other things, to determine the best times to purchase, the best place to purchase, the extent of the available market, the method of obtaining the best competition, the comparative advantages of local or centralized purchases, the best kind of contract, long- or short-time purchases, place of delivery, conditions of delivery, storage and transportation.



F. R. WADLEIGH
Chairman Coal Committee, Federal Purchasing Board

In the matter of coal purchases, chief responsibility is placed upon the Bureau of Mines. Director Bain selected Mr. Wadleigh to direct the work of this committee. One-half of Mr. Wadleigh's salary, as chief of the coal section of the fuel division of the Department of Commerce, is paid by the Bureau of Mines.

The Federal Purchasing Board is divided into commodity subdivisions known as Committees of Co-ordination of Purchase.

Mr. Wadleigh is generally recognized as one of the best possible selections that could have been made for this important post. It is admitted in the industry generally that something definite must be done if the United States is to continue a factor in the export coal trade. The Department of Commerce is in a position to render material assistance in this critical situation and it is believed that the selection of Mr. Wadleigh insures the fact that this assistance will be forthcoming.

Mr. Wadleigh is a native of Muncy, Pa. He was graduated from Princeton University in 1883. He immediately took employment with the Pennsylvania R.R., which he

served in the capacity of locomotive fireman and as an assistant in its shops. He then went with the Norfolk & Western Ry. and served that company for nine years as a fuel inspector and road foreman of engines.

After leaving the Norfolk & Western he was for eleven years associated with the coal firm of Castner, Curran & Bullitt. Later he was employed by the Chesapeake & Ohio Coal & Coke Co., where he remained five years. He also has been associated with the New River Collieries Co., the International Coal Products Corporation, Weston Dodson Co. and the Tuttle Corporation. In addition he has done consulting work as a coal-mining engineer.

Pennsylvania Soft-Coal Men Mine Nearly One Thousand Tons Per Man

THE bituminous mines of Pennsylvania in 1920 produced a total of 157,700,400 tons of coal, valued at the mines at $556,644,400, according to figures tabulated by the Pennsylvania Department of Internal Affairs. This production was approximately 20,000,000 tons greater than that of 1919, when 137,058,500 tons were produced at a value at the mines of $327,475,400.

One thousand three hundred and fifty-eight mines reported to the department for 1920 and their reports show that 159,423 persons were employed in the industry. In 1919 the mines in the bituminous region of the state gave employment to 153,207 persons. Thus there was an increase in the number of men employed in 1920 of 6,216 persons.

Foreigners led all classes of the soft-coal miners in 1920, with a total of 88,828. Americans, white, employed in the mines numbered 66,105 and Americans, colored, totaled 4,490. There were 50 women credited to the mine fields in Washington, Indiana, Greene, Fayette, Clearfield and Allegheny counties. Two hundred and thirty-six boys under the age of 16 years also were engaged in the mining industry. In 1919 there were 31 women and 176 boys at work in the bituminous region.

Bituminous-mine workers were paid a total wage in 1920 amounting to $289,657,500, all but $62,000 of which went to the male workers; in 1919 the total payroll was $196,024,700.

Fayette County was the greatest producer of bituminous coal both in quantity and in value in 1920. That county produced a total of 32,998,300 tons, having a value of $88,980,700. Westmoreland County was second in tonnage with 22,933,000, and third in value with $80,032,700. Washington County was third in quantity production with 22,575,700 tons and second in value with $82,300,800.

Of the twenty-six counties out of the sixty-seven in Pennsylvania in which bituminous coal was mined last year, the County of Venango had the smallest production, namely, 300 tons of the value of $1,400 at the mines. The output per man employed was for the whole state 989.2 tons and the average price was $3.53, of which $1.84 was wages.

Kansas Agriculture Official Opposes Use of Corn in Place of Coal for Fuel

EAR corn at 20c. a bushel is equal in fuel value to a fair grade of Western soft coal at approximately $10 a ton, according to the U. S. Department of Agriculture. In districts where corn is very cheap now the coal is usually of a rather poor grade and is selling at high prices. Under such conditions, the department states, it will pay both farmers and people in country towns to use corn instead of coal. Because of the variation in quality of both corn and coal it is difficult to make scientific experiments the results of which are applicable everywhere, but, speaking generally, the relative heating values of corn and coal indicate that corn at 10c. a bushel equals coal at $5 per ton, and at 32c. equals coal at $16 per ton.

J. C. Mohler, secretary of the Kansas State Board of Agriculture, characterized the statement as "unfortunate." "Corn is a chief element in the maintenance and fattening of live stock," said Mr. Mohler, "and, considering its efficiency in the rations for live stock, it cannot be used to greater advantage than as a foodstuff at present low prices.

"Even at equal values for heating purposes, burning corn in place of coal involves economic waste. To destroy the value of coal by substituting corn as fuel and at the same time depriving the world of the services that corn may render as feed and food is ridiculous. The whole tendency, in a broad way, is to increase the cost of living and to add to unemployment."

Finds International Control of Fuel and Raw Materials Impracticable

THE Economic Section of the League of Nations has found impracticable the resolution adopted in March, 1920, by the Miners' International Congress in favor of an international office "for the distribution of fuel, ores and other raw materials essential to the renewal of the economic life of all nations." The reasons for this decision are:

(1) That it would be impracticable to obtain the general consent of the producing and consuming states to delegate the important functions contemplated by the scheme to an international body, and the League of Nations has no power of compelling its members to enter into any such arrangement against their will.

(2) No scheme for international control of the distribution of raw materials could be operated without fixing prices and allocating supplies on some principle of rationing. This necessarily involves the international control of the whole economic life of the countries concerned.

(3) No scheme of rationing is possible without the power of compelling the consuming countries to take up their rations and pay for them, which is clearly impracticable under present conditions.

MEN EMPLOYED, WAGES EARNED PER EMPLOYEE AND TOTALS, TONS PER EMPLOYEE AND TOTAL TONS, WAGE PER TON PRODUCED AND AVERAGE VALUE PER TON FOR ALL BITUMINOUS COAL OF PENNSYLVANIA BY COUNTIES DURING 1920

Counties	Number of Employees	Total Wages	Tons Produced	Value of Production	Wages per Ton Produced	Annual Wages per Employee	Annual Tons per Man Employed	Average Value per Ton
Allegheny	14,188	$26,037,000	14,605,700	$53,164,900	$1.78	$1,835	1,029.44	$3.64
Armstrong	5,916	10,037,000	5,248,000	19,153,200	1.91	1,697	887.09	3.65
Beaver	187	286,300	125,900	553,100	2.27	1,531	673.26	4.39
Bedford	1,154	1,573,600	640,800	2,887,300	2.46	1,364	555.29	4.51
Blair	369	459,500	172,700	844,100	2.66	1,245	468.02	4.89
Butler	1,953	3,164,200	1,292,400	5,979,700	2.45	1,620	661.75	4.63
Cambria	20,488	37,338,900	17,182,400	71,865,500	2.17	1,822	838.66	4.18
Centre	1,804	3,497,200	1,457,300	7,091,900	2.40	1,939	807.82	4.87
Clarion	2,291	3,254,400	1,377,400	5,518,000	2.36	1,421	601.22	4.01
Clearfield	10,764	18,017,900	7,622,200	33,491,800	2.36	1,674	708.12	4.39
Clinton	264	538,700	289,700	1,034,200	1.86	2,041	1,097.35	3.57
Elk	1,260	2,219,100	963,400	3,582,800	2.30	1,761	764.60	3.72
Fayette	24,336	47,305,500	32,998,300	88,980,700	1.43	1,944	1,355.95	2.70
Fulton	61	111,600	50,100	200,400	2.23	1,830	821.31	4.00
Greene	2,065	3,809,700	1,746,600	6,585,800	2.18	1,845	845.81	3.77
Huntingdon	1,386	2,134,900	833,100	3,625,100	2.56	1,540	601.08	4.35
Indiana	9,846	18,704,300	9,613,900	34,104,000	1.95	1,900	976.43	3.55
Jefferson	5,148	8,795,600	4,749,400	18,516,800	1.85	1,709	922.57	3.90
Lawrence	214	249,900	94,500	300,600	2.64	1,168	441.59	3.18
Lycoming	25	28,300	11,600	58,200	2.44	1,132	464.00	5.02
Mercer	798	1,166,100	487,900	1,996,100	2.39	1,461	611.40	4.09
Somerset	12,328	20,982,800	9,913,000	41,797,500	2.12	1,702	804.10	4.22
Tioga	1,048	1,941,600	715,100	2,977,800	2.72	1,853	682.35	4.16
Venango	9	4,900	300	1,400	16.33	544	33.33	4.67
Washington	20,731	40,244,400	22,575,700	82,300,800	1.78	1,941	1,088.98	3.65
Westmoreland	20,790	37,754,100	22,933,000	80,032,700	1.65	1,816	1,103.08	3.49
	159,423	$289,027,500	157,700,400	$566,644,400	$1.83	$1,813	989.00	$3.59

Anthracite Costs and Prices During 1921 Compared with Those of 1913

THE anthracite industry is one of the few in which deflation has not yet taken place. Moreover, the hard-coal situation affects the consumer almost as intimately as does the supply of food. For this reason the subject has been considered of sufficient importance to warrant an independent investigation by the New York Trust Co. of the factors entering into the cost and price of anthracite, the results of which are given here.

The company is indebted to representative producers and distributors of anthracite for their assistance in obtaining the information necessary to a proper understanding of the facts. To focus the results of the investigation, the figures given, unless otherwise indicated, relate to the cost of stove coal and its price in New York City.

While data are not available for a thoroughly reliable comparison of present-day mine costs with 1913 figures, since the records formerly compiled by the Federal Trade Commission from returns made by all the principal operators were discontinued in 1918, it is believed that the tables of costs published by the anthracite operators represent a fair average of present costs. Costs for 1913 are taken from Federal Trade Commission reports.

It must be considered that for every seven tons of domestic sizes (egg, stove and chestnut) there are three tons of steam sizes (buckwheat, rice and birds-eye) produced as a necessary byproduct. Steam sizes are sold at much lower prices than domestic sizes in order to meet the competition of bituminous coal. In published figures on mine costs, all sizes have been lumped together and no allocation of cost has been made to grades which bring varying prices. Selling prices also have been averaged to give a "sales realization" price in calculating the margin for each ton mined. While the realization price is necessarily lower than the price of stove coal, the percentage of the elements entering into mine costs are the same in all cases. On this basis the following table compares the average mine costs of the principal producers in 1913 with the 1921 costs as published by the operators:

TABLE I. AVERAGE MINE COSTS OF PRINCIPAL ANTHRACITE PRODUCERS IN 1913 AND 1921
(Per Gross Ton)

	1913		1921	
	Dollars	Percentage of Total	Dollars	Percentage of Total
Wages	$1.60	60.2	$3.92	63.7
Supplies	0.35	13.1	1.05	17.1
General expense	0.34	12.8	0.58	9.4
*Margin	0.37	13.9	0.60	9.8
Sales realization	$2.66	100.0	$6.15	100.0

*From the margin must be deducted Federal taxes and interest on the investment (and in the case of 1913, selling expense as well).

It will be noted that wages and supplies, factors over which the operators have had no control, have increased more than the other two items. The amount and percentages of increase in the four elements of mine cost are as follows:

TABLE II. INCREASES IN PRINCIPAL ELEMENTS OF MINE COST IN 1921 COMPARED WITH 1913
(Per Gross Ton)

	Dollars	Percentage
Wages	$2.32	145
Supplies	0.70	200
General expense	0.24	71
Margin	0.23	62
Total increase in mine price (average of all grades)	$3.49	131

For the purpose of comparison, the above cost figures, which are based on all sizes, may be translated into stove costs by multiplying them by the percentage that the mine price of stove bears to the "sales realization," or the average mine price of all grades. Such a calculation shows that with relation to stove coal wages have increased $2.70, supplies 83c., general expense 28c., and the margin 28c., or a total of $4.09 per net ton. These figures expresrs the difference between 1913 and 1921 costs as applied to stove coal.

Upon leaving the mine the next cost burden encountered by coal on its way to the consumer is transportation. This cost (so far as dealers in New York City are concerned) consists of freight to one of the New Jersey ports and lighterage to New York. The figures for 1913 and 1921, with percentages of increase, are given in the table following.

It is evident that the increases of $1.29 in freight rates and 35c. in lighterage have been unavoidable and important factors in causing higher retail prices.

TABLE III. TRANSPORTATION COSTS ON ANTHRACITE FOR NEW YORK CITY IN 1913 AND 1921
(Per Gross Ton)

	1913	1921	Percentage of Increase
Freight to Perth Amboy	$1.40	$2.61	92
Government tax on freight	....	0.08	
Lighterage	0.15	0.50	233
	$1.55	$3.19	106
Increase	....	$1.64	...

Coming to the price paid by consumers in New York it is found that the present price of $13.30 per ton for stove coal compares with a price of $6.66 in the corresponding period of 1913. This is an increase of approximately 100 per cent as against an increase of 62.8 per cent in the cost-of-living index compiled by the National Industrial Conference Board. There has been a reduction from the peak of $14.54 in January, which is greater than the usual 50c. per ton reduction which occurs in the spring, but the price is still out of line with other commodities.

The three principal elements which make up the retail price are as follows:

TABLE IV. COMPONENTS IN THE NEW YORK RETAIL PRICE OF ANTHRACITE, 1913 AND 1921

	1913			1921		
	Gross Ton	*Net Ton	Per Cent of Total	Gross Ton	*Net Ton	Per Cent of Total
Mine price	$3.42	$3.05	45.8	$8.00	$7.14	53.7
Transportation—						
Freight and lighterage	1.55	1.38	20.7	3.19	2.85	21.4
Retailer's gross margin	....	2.23	33.5	....	3.31	24.9
Price paid by consumer in New York City	....	$6.66	100.0	....	$13.30	100.0

*Mine prices and freight are quoted on a gross ton of 2,240 lbs. These have been translated into cost per net ton of 2,000 lbs.

It will be noted that mine prices now constitute 53.7 per cent of the total paid by the consumer against 45.8 per cent in 1913. The percentage paid for transportation is approximately the same in both periods, while the retailer's gross margin has dropped from 33.5 per cent in 1913 to 24.9 per cent at present. Too great an importance should not be attached to this fact, however, as the increase in the retailer's costs, which come out of gross margin, may have been much less than the increase in other factors.

Of the increase of $6.64 paid by the consumer, $4.09 represents the increase in mine price (134 per cent), $1.47 is increase in transportation cost (106 per cent), and $1.08 increase in retailer's gross margin, or 48 per cent. The following table makes possible a complete analysis of the increase paid by the New York consumer:

TABLE V. SUMMARY OF COST INCREASES AFFECTING 1921 RETAIL PRICE OF ANTHRACITE IN NEW YORK
(Per Net Ton)

Increases paid to	Increase over 1913 Dollars	Percentage
Mine wages	$2.70	145
Mine supplies	0.83	200
Mine general expense	0.28	71
Mine margin*	0.28	62
Total increase in mine price	$4.09	‡134
Freight	$1.15	
Lighterage	0.32	
Total increase in transportation	$1.47	106
Retailer's gross margin†	1.08	48
Total increase paid by consumer in New York	$6.64	100

*Out of this margin must be paid Federal taxes and interest.
†Out of this margin must be paid all expenses incurred in handling the coal from the dock to the consumer.
‡The difference between 134 per cent in the above table and 131 per cent in Table II is caused by variation in the relation of stove prices to the average of all prices in the two periods.

From the foregoing table it is seen that the two biggest single items are the increases in mine wages of $2.70 per net ton and in transportation of $1.47 per net ton. The total of these two items constitutes 63 per cent of the total

increases, and without a readjustment of these two factors little can be done substantially to reduce coal prices.

It is apparent from the figures presented that coal prices at retail, which show an increase of 100 per cent above 1913, are out of line with other necessities of life. Coal at wholesale, which shows an increase of 134 per cent, is further out of line than the retail prices. The general price level of commodities at wholesale is only 25 to 50 per cent above 1913. The general reduction, from a peak much higher than that attained by coal, was brought about in most cases by a forced liquidation of stocks on hand. Owing to the special nature of the product this has not been the case with anthracite. Large stocks have not been present, or where they exist they are in comparatively strong hands. The coal operator cannot see why he should operate at a loss, and it appears that the situation has not as yet been such as to force him to do so, as has been the case in other lines.

In order to effect a considerable reduction in retail prices it will be necessary to effect a reduction all along the line. Immediate action in this connection seems improbable. Mine wages are fixed by a written contract based on the award of a Federal arbitration commission. This contract runs until March 31, 1922, and the miners have refused to consider a readjustment. In fact, they have announced that they will demand further increases. Freight rates at present are barely adequate for railway maintenance, and are not likely to be reduced immediately (unless railway wages also can be reduced), and from the evidence available the retailer's cost of handling has shown no reduction.

The bulk of the increase from 1913 can be laid directly to higher mine wages and freight rates. Increases in supplies, mine expenses, retailer's costs and profits have all helped swell the total. These were to be expected during the period of inflation and it must be admitted that coal prices did not advance nearly as much as the general price level.

The lack in the anthracite industry of compelling business reasons for deflation may make it necessary for the big men of the industry to take strenuous methods to relieve the situation for the consumer. A situation of this character often leads to agitation for government control or ownership or price fixing or interference of other sorts, the disastrous consequences of which have been only too apparent whenever an industry has been subjected to them. No intelligent business man wants to see this come about, since nothing could be more unfortunate for producer, retailer and consumer alike. But it may be expected unless the best brains of the coal industry and its legal and financial advisers make strenuous efforts to correct the situation before the irresponsible and incompetent undertake to do it for them.

Railroad executives have just produced constructive measures for reduction of rates in response to a country-wide demand and this in the face of financial and operating difficulties which make the coal problem look simple. Leaders of the coal situation should do the same and even if their efforts should not be entirely successful at first, a clear exposition of the situation will enable public opinion to place the blame for high prices exactly where it belongs.

Injunction Sought Against Anthracite Tax

AN equity suit to test the constitutionality of the Pennsylvania anthracite tax of 1½ per cent ad valorem on each ton prepared for the market was filed Nov. 9 in the Dauphin County Court, Harrisburg, Pa. The proceedings had been expected and George E. Alter, Attorney General, at once filed an answer, and the court fixed Nov. 25 as the date for the hearing. Roland C. Heisler, of Philadelphia, a shareholder of the Thomas Colliery Co., of Schuylkill County, is the plaintiff, and the colliery company is made one of the defendants, as are its directors and the state's fiscal officers, Samuel S. Lewis, Auditor General, and Charles A. Snyder, State Treasurer. Counsel for the plaintiff are Reese Harris and Henry S. Drinker, Jr., of Philadelphia; William D. Jenney, of New York, and Frank W. Wheaton, of Wilkes-Barre. The Attorney General and three of his deputies, Robert S. Gawthrop, Emerson Collins and George R. Hull, appear as counsel for the defendants.

The state coal tax, which became a law May 11, became effective July 1, and the first payments to the state are to be made in January, 1922. The law provides that the superintendents of the mines assess the tax, and Herbert Suender, superintendent of the Thomas Colliery Co., is therefore made one of the defendants. Mr. Heisler seeks to enjoin him from making the assessment and to restrain the directors from having the tax assessed and paying it. The plaintiff asks that the Auditor General be enjoined from collecting the tax and the State Treasurer from joining in any tax settlements or receiving the tax.

The plaintiff's bill states that Superintendent Suender has been assessing the coal of the company daily and that this act is "an essential step in the proceedings to enforce the collection and commits the company to the payment of said unlawful tax to the injury of the plaintiff and the other stockholders." The bill avers that the difference between anthracite and bituminous coal is one of degree and not of kind, that the two kinds of coal are sold in competition and that large quantities of Pennsylvania anthracite are sold outside the state. It is held, therefore, that the law is not only in conflict with the state but also with the Federal Constitution.

The answer states that the commonwealth does not admit that anthracite and bituminous coal are merely different grades of coal but that they are different commodities. The differentiation of the two kinds of coal is explained and it is shown that anthracite is found only in a few counties and that bituminous coal is never found in the same counties. The state declares that anthracite is used for fuel only, whereas bituminous coal is converted into coke and other products. The commodity rates of the railroads of Pennsylvania, the answer sets forth, recognize a difference between anthracite and bituminous coal. Congress recognized this difference, it is said, in fixing different import taxes for anthracite and bituminous coal. The legal ton for anthracite in Pennsylvania is 2,240 lb., whereas the legal ton for the bituminous coal of the state is 2,000 lb., and the state has also regulatory laws for the anthracite fields different from those for enforcement in the bituminous fields.

Oil Fuel for Motive Power in World's Shipping Makes 6 Per Cent Gain in Year

OF the world's total tonnage of vessels of 100 tons and upward on Lloyd's Register, an approximate division as to the fuel motive power is as follows, according to Westgarth Brown, president of the South Wales Institute of Engineers:

	Per Cent
For the year ending June, 1919:	
Using coal as fuel	82
Fitted to use oil as fuel for boilers	10.5
Using oil in internal combustion engines	1.5
Using sail power only	6
For the year ending June, 1920:	
Using coal as fuel	76
Fitted to use oil as fuel for boilers	16.3
Using oil in internal combustion engines	1.7
Using sail power only	6

It will thus be seen that during the period of one year oil has gained at the expense of coal 6 per cent of the tonnage available.

WEST VIRGINIA HAS REVISED ITS STATE MAP.—A new edition has been made of the Coal, Oil, Gas, Limestone and Iron-Ore Map of the West Virginia Geological Survey. This edition shows, like the last, the gas and oil pools, now better known than before, many anticlinal lines not heretofore charted and is accompanied by a book containing the addresses of all the principal coal-mine operators in West Virginia up to July 1, 1921. It is printed on a scale of eight miles to the inch and is sold by the Survey, Box 848, Morgantown, W. Va., for one dollar; six copies for five dollars. Five series of measures are differentiated by colors on the map.

Public Reaction, Despite Striking Misconceptions, Is Favorable to Anthracite Publicity Campaign

PUBLIC reaction on the newspaper advertising being done by the General Policies Committee of the anthracite operators, on the whole, has been favorable. Several hundred letters from nineteen states and Canada have been received of which but nine expressed any measure of disapproval.

Here is the substance of a letter from a retail dealer in Philadelphia that clearly expressed a point of view becoming every day more common in the trade:

"I agree with you that there has been a great deal of hard feeling against the retailer. There always has been and always will be until the operators co-operate with us. Take any other line of business. Who does the selling for the retailer? Why, the advertisement of the manufacturer.

"Follow me a minute: You go to bed at night, wind up your Elgin watch, set your Big Ben so as not to oversleep, get into a Bernstein bed covered with a Komfo mattress and go to sleep. In the morning you get up, put on your B.V.D.'s, your Hart-Schaffner suit, get your Gillette safety razor and shave with Colgate cream. You go down stairs to your dining room and eat Swift's premium ham and eggs, and your Kellogg's cornflakes or your Shredded Wheat, you start toward your Buick or Dodge and go to the office.

"Only the past few weeks have the operators ever done anything in the way of advertising. The public needs educating before they will have any confidence in us."

There is no question but that the minds of those who have taken the trouble to write letters to the operators were open and that the advertisements made an impression. Some of the criticisms are vigorous, but so are some of the commendations.

Advertising Man Wants Statements Under Oath

One man—an advertising man, of all things—in Massachusetts, writes to know why, if the statements in the advertisements are true, "don't you swear to them?" He thinks the coal man is not to be believed except upon oath, or rather that the public will accept none but attested facts. It would go hard with many advertisements outside of the coal industry if this rule were to be universally adopted.

Another man, from Connecticut, frankly says that he had been "of the opinion that the coal men were largely grafters," but that the advertisements had been "a revelation to me."

From a Broadway address comes a clipping of the first advertisement in the series, with a brief note attached: "Why do we pay $13.75 a ton?"

Still another letter, from a manufacturer of paper goods in Massachusetts, says: "This [grumbling at prices] is nothing new, as nearly everybody is kicking about the price of everything."

One of the interesting phases of the correspondence is the interest shown by students. There were twenty-three requests from pupils of all sorts, from high school to college and state debating leagues. In New Jersey—especially in Newark, Jersey City, and Somerville—the high-school pupils are taking up the study of coal, and they requested information from the committee.

Out in Minnesota the question of government ownership of the coal industry is the subject of debate in the state league this winter, and members of the league are now in possession of information sent from the Anthracite Bureau of Information.

There are a good many passing references to prices, and a good many suggestions that some explanation be given of the dollar the consumer pays, rather than of the dollar the operator gets. The point is made in several cases that what interests the consumer is the price he pays for coal delivered at his house, and not the price paid at the mine.

There are instances of the confusion in the public mind as to the differences in coal. One New Jersey worthy wants to know why it costs $13 or so to have coal delivered to his house when he reads in the papers that the railroads have been buying roal for $3.75 a ton. Apparently the run-of-mine intellect does not grasp the difference between anthracite and soft coal, nor the difference between railroad fuel bought at the mine and domestic fuel dumped into the cellar.

There also are highly-placed inquirers after knowledge. The Secretary of Labor and the statistics branch of the General Staff, U. S. Army, at their own solicitation, are receiving information regularly.

Four firms offer to make snappy movies to carry the story of anthracite home to millions, and another guarantees to make up graphic charts which will convert all the unbelieving coal consumers. Two firms would like to get facts on the call for timber in the hard-coal region, and two gentlemen—one in West Virginia and one in Wyoming—offer to make it interesting for any hard-coal producer who might like to try out bituminous mining, as they have land to sell.

A grocer writes in to tell how he approves the idea of giving publicity to costs and detailing the elements entering into them. A man interested in corporation financing also writes in, with his eagerness to help worthy distressed concerns perhaps just a little visible between the lines. A Massachusetts Mayor requests the latest information as to royalties paid in the anthracite fields.

It might interest retailers to know that a good many queries ask for quotations on carload lots and the chances of being able to buy coal direct.

A letter from a firm of manufacturers and dealers in lighting fixtures and art metal deals with a question often touched upon in the correspondence and it states the case, from the consumer's point of view, succinctly as follows:

"Your article 'Coal Producers' can only tell about the mine price. Can you tell me and the rest of the public how, when paying for nut coal, that half of it is pea coal? Can you also tell the public why, when they order pea coal, half of it is buckwheat? When the writer complained to the dealer, his answer was that is how they received it from the mines. Now instead of you being abused it is the public that is being abused. This matter should be given your serious thoughts and attention. If I were to sell you anything in our line you would expect what you bought, but when you buy coal today you get what you don't expect."

Appoint Committees to Devise Commerce Department Aid to Mining Industry

SECRETARY HOOVER held a conference at Washington Nov. 14 with a committee appointed by the American Mining Congress, when co-operation of the Department of Commerce in efforts to develop the mining industry of the United States was discussed. More than two hours were devoted to a discussion of possible development of exports, with the result that sub-committees were appointed to prepare definite plans in which the department could co-operate.

The following mining men were present at the conference with Mr. Hoover: Representing the coal branch: Albert G. Nason, president Nason Coal Co., Chicago; J. G. Bradley, president Elk River Coal & Lumber Co. and also president of the National Coal Association; T. H. Watkins, president Pennsylvania Coal & Coke Corporation; J. G. Puterbaugh, president McAlester Fuel Co., and E. W. Parker, director of the Anthracite Bureau of Information.

Representing the oil branch: E. L. Doheny, New York, president of the Mexican Petroleum Co.; George S. Davidson, Pittsburgh, president of the Gulf Refining Co.; Judge A. L. Beatty, president of the Texas Company.

Representing the metal branch: Bulkeley Wells, Denver, gold; F. B. Richards, Lake Superior Iron Ore Association; Edgar Z. Wallawer, zinc; B. B. Thayer, New York, copper.

Disclaims Federal Liability for Profit Cut Due to Fuel Administration Prices

SOLICITOR GENERAL BECK has filed in behalf of the government a brief before the U. S. Supreme Court asking that that court sustain the decision of the Court of Claims against the suit of the Morrisdale Coal Co., which sought to recover the difference between fuel prices fixed by the Fuel Administration and those which it could obtain under private contract. The coal company claimed that the government requisitioned 12,000 tons of coal from June to November, 1918, at a price less than the sale price agreed to by its former customer, and that the coal was diverted by the Fuel Administration.

The government points out that the fuel was not actually expropriated or used for any government purpose or requisitioned for public uses. The government declines to admit liability to make good the differences between prices fixed during federal control and prices which might otherwise have been obtained either in open market or under sales contracts made prior to the order of the Fuel Administration. The government insists that the power to regulate must be unaffected and undiminished by the existence of contracts entered into prior to the advent of public control, and that contracts are subject to the possibility that the sovereign may render them unenforceable or impair their value.

The government denies that the diversion of coal here in question was the taking of private property for public use or binding the government to indemnify against loss. It asserts that public regulation restrictive of freedom of contract and of self-controlled business management is universally imposed without provision for compensation. Unless property is actually taken and directly put to use for a public purpose no duty to compensate arises since the injury complained of results incidentally from valid exercise of government power. The government points out that there is no allegation in this case that the price fixed by the Fuel Administration and received by the coal company for the diverted coal did not afford a fair return and reasonable profit on invested capital over and above cost of production and plant depreciation.

Coal Represents 33.6 Per Cent of Capital Invested in U. S. Mining Industries

NEARLY $7,000,000,000 is invested in mines and mining in the United States, according to the 1919 census. Of this total, bituminous coal represents $1,904,450,000, or 27.4 per cent, and Pennsylvania anthracite $433,868,000, or 6.2 per cent, a total for the coal-mining industry of 33.6 per cent. Petroleum and natural gas combined overtop coal by a slight margin, representing 34.8 per cent of the country's total investment in mining. Copper follows coal with $853,639,000, or 12.3 per cent, after which comes iron, with $501,396,000, or 7.2 per cent.

The instructions on the census schedules called for the total amount of capital owned and borrowed representing the operators' investment in the mining enterprises on the last day of the business year reported. Securities or loans representing investments in other enterprises were not to be included. In many instances, however, and especially in those cases where the company was carrying on some other industry in connection with mining, it was found difficult or impossible to obtain an accurate return for capital according to the census definition. The figures compiled by the Census Bureau may, however, be accepted as a rough approximation of the amount of capital invested in mining.

CAPITAL INVESTED IN MINES AND QUARRIES IN THE UNITED STATES IN 1919, BY INDUSTRIES

Industry	Amount	Industry	Amount
All industries	$6,955,468,831	Miscellaneous[4]:	
Fuels:		Abrasive materials	$1,442,909
Coal, anthracite[1]	433,868,039	Asbestos	772,299
Coal, bituminous	1,904,450,123	Asphalt	3,171,405
Petroleum and natural gas[2]	2,421,485,942	Barytes	2,290,455
Metalliferous ores:		Bauxite	1,950,173
Iron	501,396,044	Chromite	1,572,908
Copper[3]	853,639,017	Clay[6]	17,644,524
Gold and silver:		Feldspar	729,404
Lode mines[3]	280,388,711	Fluorspar	8,046,827
Placer mines	24,574,441	Fuller's earth	1,877,233
Lead and zinc[3]	197,223,814	Graphite	3,755,055
Manganese	7,268,426	Gypsum	13,541,548
Quicksilver	4,423,601	Magnesite	2,612,605
Rare metals	4,889,912	Mica	699,373
Stone[4]:		Millstones	53,105
Basalt	12,899,171	Mineral pigments	815,572
Granite	18,823,980	Phosphate rock	72,733,956
Limestone[5]	82,124,367	Pyrite	4,455,785
Marble	9,033,522	Silica	661,711
Sandstone	18,955,321	Sulphur	28,046,634
Slate	6,923,172	Talc and soapstone	6,225,747

[1] Pennsylvania only.
[2] Including natural-gas-gasoline extraction plants, but not including distributing systems, etc., of oil and gas companies.
[3] Including mineral milling plants, operated by mining enterprises, but not including metallurgical works.
[4] Including mills and dressing plants operated at the mines or quarries.
[5] Exclusive of enterprises producing limestone for their own use at the quarries in the manufacture of lime.
[6] Including only enterprises producing clay for sale as such.

Conference Agrees That Nova Scotia Wage Scale Shall Not Be Reduced This Year

REPRESENTATIVES of District No. 26, United Mine Workers of America, meeting with company officials, succeeded on Nov. 11 in getting the British Empire Steel Corporation to extend the wage scale now in effect from Nov. 30 to Dec. 31.

The corporation recently had announced that all plants and mines under its control in Nova Scotia would be shut down unless the 20,000 workmen accepted a 10-per cent wage cut, effective Dec. 1. The month's extension was granted as a compromise after the miners had asked an extension of four months.

Another conference is called for Dec. 15, when the officials of the British Empire Steel Corporation will endeavor to put the wage scale at the figure desired.

EVIDENTLY RAILROAD LABOR REALIZES that a strike would not be a hit.—*Norfolk Virginian-Pilot.*

Bituminous Coal Loaded Into Vessels at Lake Erie Ports During Season to End of October*

(In Net Tons)

Ports	Railroads	1921 Cargo	1921 Fuel	1921 Total	1920 Cargo	1920 Fuel	1920 Total	1919 Cargo	1919 Fuel	1919 Total
Toledo	Hocking Valley	4,079,150	107,350	4,186,500	3,344,832	73,820	3,418,652	3,939,454	111,006	4,050,460
	Toledo & Ohio Central	1,027,438	29,667	1,057,105	1,508,792	56,183	1,564,975	1,158,862	33,925	1,192,787
	Baltimore & Ohio	2,354,369	72,016	2,426,385	1,337,880	38,948	1,376,828	2,101,187	50,642	2,151,829
Sandusky	Pennsylvania	1,552,971	45,076	1,598,047	1,418,843	21,775	1,440,618	1,253,718	33,382	1,287,100
Huron	Wheeling & Lake Erie	1,491,595	42,905	1,534,500	1,641,441	84,893	1,726,334	1,400,981	50,170	1,451,151
Lorain	Baltimore & Ohio	2,393,742	97,034	2,490,776	2,735,633	171,290	2,906,923	2,632,866	143,647	2,776,513
Cleveland	Pennsylvania	1,990,664	86,325	2,076,989	1,054,953	151,469	1,206,422	2,190,614	235,336	2,425,950
	Erie	359,981	12,782	372,763	364,048	17,486	381,534	305,977	9,904	315,881
Fairport	Baltimore & Ohio							16,692	12,954	29,646
Ashtabula	New York Central	1,064,824	59,124	1,123,948	1,351,849	246,548	1,598,397	1,625,130	143,138	1,768,268
	Pennsylvania	2,213,665	72,753	2,286,418	1,662,618	83,858	1,746,476	1,934,022	98,285	2,032,307
Conneaut	Bessemer & Lake Erie	1,362,601	18,258	1,380,859	2,105,250	35,516	2,140,766	1,343,888	9,683	1,353,571
Erie	Pennsylvania—West	770,091	27,030	797,121	228,731	21,730	250,461	690,144	41,835	731,979
	Pennsylvania—East	209,778	34,073	243,851	335,957	68,672	404,629	163,301	13,181	176,482
Totals		20,870,869	704,393	21,575,262	19,090,827	1,072,188	20,163,015	20,756,836	987,088	21,743,924

* Compiled by Coal & Ore Exchange, Cleveland, Ohio; H. M. Griggs, Manager

October Anthracite Shipments 353,371 Tons Greater Than Those of September

SHIPMENTS of anthracite for October, as reportred to the Anthracite Bureau of Information, Philadelphia, amounted to 5,872,753 gross tons against 5,519,412 for the preceding month of September, an increase of 353,371 gross tons; but show a decrease over October of last year of 368,118 gross tons, when 6,240,901 gross tons were recorded. October of this year can be regarded as a fair average shipment when consideration is given to the fact that a number of mines in the Scranton district were idle during the month owing to the fact that they could not operate under the provisions of the Kohler Act. Operations at these mines were resumed, however, on Nov. 2. The total shipments of anthracite for the coal year, beginning April 1, have amounted to 40,223,367 gross tons as compared with 39,720,654 gross tons for the corresponding period last year, a gain of 502,713 tons.

Shipments by initial carriers, in gross tons, follow:

	October, 1921	September, 1921
Philadelphia & Reading	1,104,828	1,081,085
Lehigh Valley	1,048,996	966,600
Jersey Central	570,189	576,875
Lackawanna	759,492	736,571
Delaware & Hudson	898,376	711,199
Pennsylvania	492,632	426,344
Erie	618,034	631,882
New York, Ontario & Western	126,925	123,742
Lehigh & New England	253,311	265,114
Totals	5,872,783	5,519,412

West Virginia Court Is Asked to Abolish Check-Off; Decision Expected Soon

LEGAL activities in connection with the move to abolish the check-off were transferred from Indianapolis and Chicago last week to Charleston, W. Va., where identically the same suit brought before Judge Anderson at Indianapolis was pending before Judge George W. McClintic in the U. S. District Court for the Southern District of West Virginia. It was not originally intended to try this case before the regular November term but early in the week counsel for the plaintiffs asked Judge McClintic to set Thursday, Nov. 10, as the date for the hearing. That was agreed to and counsel for the defendants notified. The plaintiffs in this case, as in the Indianapolis court, are the Borderland Coal Corporation and sixty-three other coal companies and the plaintiffs seek an injunction to restrain and enjoin the activities of the United Mine Workers in the Mingo district and to prevent operators from continuing the check-off.

A. M. Belcher, of Charleston, of counsel for operators, began his argument for the issuance of an injunction as requested, making the assertion that "If a drastic injunction is granted, as we have a right to expect, it is not because of anything done by the Mingo operators but because the United Mine Workers have placed themselves in such a position that they are outside the law."

Counsel for the operators laid stress on the fact that the few remaining coal operators who have refused to permit the unionization of their mines want to do a legitimate business. "We don't want to turn over our business to the United Mine Workers, which is an organization controlled at Indianapolis by the Central Competitive Field," Mr. Belcher declared.

In support of his assertion that such control existed, Mr. Belcher said that only a few weeks ago northern West Virginia coal operators had sought to effect an adjustment of wages in conference with the United Mine Workers because mines in the section referred to could not operate in competition with the Somerset and other Pennsylvania fields and that the reply of the United Mine Workers officials of District 17 had been that it was out of the question to reduce wages because the rate of wages was set in the Central Competitive Field.

Answering Mr. Belcher's argument, Harold W. Houston, of Charleston, of counsel for the United Mine Workers, declared that the check-off system was originally devised by the operators, having been used long before the days of the union and that it was utilized by coal companies as a means of collecting for fuel, physicians' fees, grocery bills and rent.

"For the convenience of both parties the check-off system was adopted in connection with union dues," continued Mr. Houston. There is nothing essentially illegal in the check-off system and there has been no evidence introduced to prove that any of the check-off money was used for illegal purposes."

The case heard by Judge McClintic was originally set for hearing at Huntington but was later transferred to Charleston for the convenience of both parties. It was generally expected at the conclusion of the hearing that Judge McClintic would render a decision in this case before Nov. 15, when the regular November term of federal court begins.

Jobbers Will Furnish Coal Statistics Monthly to the Government

THE American Wholesale Coal Association has received from F. R. Wadleigh of the coal division of the Bureau of Foreign and Domestic Commerce a request that certain information be furnished on the first of each month during the forthcoming winter. It appears that the Department of Commerce when preparing to meet a possible railroad strike wanted estimates of the supply of coal on hand at some sixty different points in the United States. It was desired to know the number of days' supply on hand among retailers, householders, public utilities and industries. The association, through its Washington office, was able to compile this information within twenty-four hours. The service was so prompt and satisfactory that the Department of Commerce desires to be kept advised similarly this winter.

The executive committee of the association concluded that it would gladly supply this information. The statement was made by C. L. Deering and others that as the coal trade had volunteered to supply such information as the government might want, this proposed action by the committee was but "making good" on the promise. Accordingly, requests will be sent out by mail to the directors and others on the 25th of each month calling for the desired information.

Illinois Union Lends to Kansas Insurgents Money to Continue Outlaw Strike

A RESOLUTION providing that an assessment of $1 per month be laid on the United Mine Worker members in Illinois to raise $90,000 monthly on behalf of the striking Kansas mine workers was passed Nov. 11 by the annual convention of the union members in the State of Illinois.

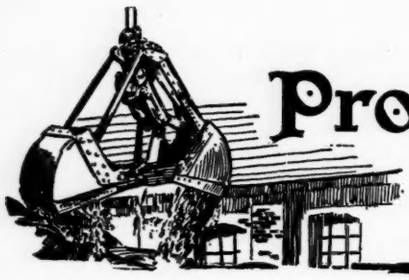
The resolution also condemned the action of John L. Lewis, international president, in removing from office President Howat and the other executive officers of District 14 without even giving them an opportunity to comply with the action of the official convention, and for "appointing men to govern District 14 in whom the membership of Kansas has no confidence."

The Kansas industrial law, against which the fight of Kansas miners is directed, was termed "Governor Allen's nefarious industrial court law, which chains the workers to the job and takes from them the right of free men, namely the right to strike as a last resort to right a wrong that may be perpetrated by our industrial masters."

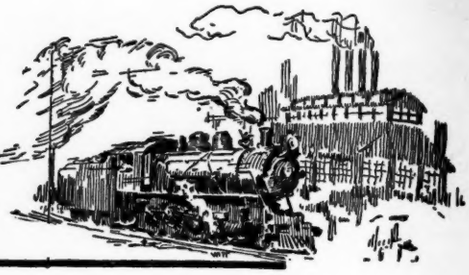
Prior to the vote on the resolution President Farrington warned the delegates to go slow in their decisions, as they were likely to face a war with the international organization, and in the clash they must go the limit until one side or the other was forced to surrender. Farrington said that if the resolution was approved, he would lead the fight.

Deny Helper Promotion, 8,000 Miners Quit

EIGHT THOUSAND anthracite mine workers at six collieries of the Pennsylvania Coal Co., near Wilkes-Barre, Pa., went on strike Monday, Nov. 14, because, it was announced, the company refused to promote a blacksmith's helper to the position of blacksmith after the latter had quit his job. Other grievances are said to be involved.



Production and the Market



Weekly Review

FOR three weeks the consumers took sufficient interest in coal to buy fairly heavily for storage. They kept this up during the period of uncertainty of a railroad strike and during the flurry of outlaw strikes at the coal mines over Judge Anderson's injunction. But things have settled down again to a waiting game for more and better business conditions. It is still decidedly a buyers' market and a good time to buy. Some hold it also is a good time to wait, arguing that prices are good for at least thirty days. Predictions now are that the government's report of stocks as of Nov. 1, which is expected to be available in two weeks, will show that millions of tons of steam coal have been put in storage this autumn, much if not most of which will be held against a suspension of mining next April.

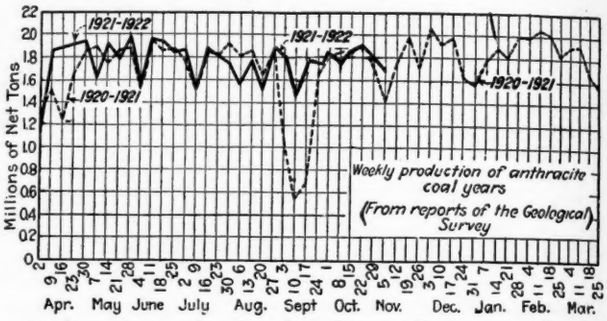
Production of soft coal in the week of Nov. 5 fell to 9,344,000 tons, a drop of 1,624,000 tons, or 15 per cent, accounted for by observance of All Saints' Day and outlaw strikes in the Central Competitive Field, possibly accentuated by a reaction in demand after the settlement of the railroad controversy.

Holidays Curtail Production and Consumption

There is nothing in reports so far available to indicate any gain in production during the week of Nov. 12. Election and armistice day observance cut both consumption and production. Barring a decision this week by the Chicago court unfavorable to the United Mine Workers, nothing save severe cold will raise the demand for bituminous coal above 10,500,000 tons until after the New Year holiday.

Prices are stable, *Coal Age* index standing firm at 91. Coal that became "distressed" because shipped on consignment during the strike threat periods has been absorbed by this time. In the Chicago market the huge oversupply of unsold screenings has dropped from 500,000 tons to less than 50,000 tons in four months. The shoe is on the other foot now, for domestic sizes are in substantial but no serious oversupply.

The Upper Lake region has stopped buying at the mines except small lots of special grade coals. The New England waterfront is crowded with boats waiting to discharge cheap West Virginia coal, to the disadvantage of all-rail business. Canada is harboring a fat surplus, much unsold, of steam coal. Coal is accumulating at Hampton Roads.

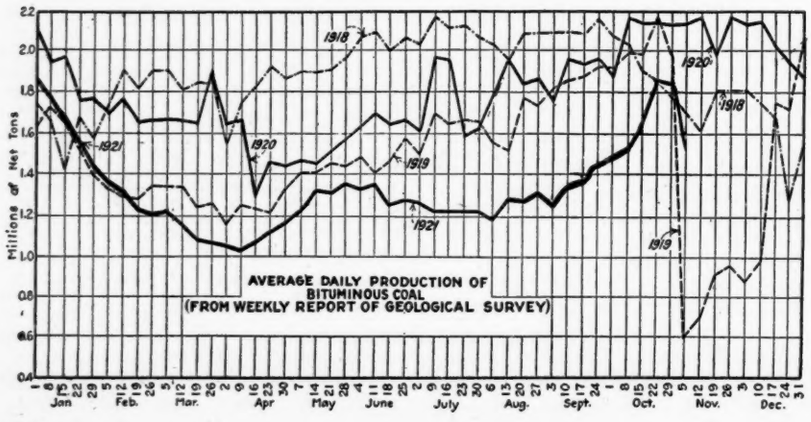


Anthracite production has been off temporarily for two weeks because of holidays. Demand is fairly steady and prices firm. Coke output is slowly gaining as the iron business recuperates.

BITUMINOUS

Production of bituminous coal received a setback during the first week in November, when, according to the Geological Survey, the output dropped 1,624,000 tons to 9,344,000 tons. The observance of a religious holiday, labor troubles incident to the check-off controversy and a market plugged by abnormal buying when the rail strike threatened were the main causes of the loss in output. Loadings on Monday and Tuesday of last week—Nov. 7-12—were 65,730 cars, or practically the same as on the corresponding days of the week before the railroad strike order was issued.

Cumulative production for 1921 is approximately 55,000,000 tons behind 1919, 113,000,000 behind last year and about 137,000,000 behind the average of the war years. It is



Estimates of Production

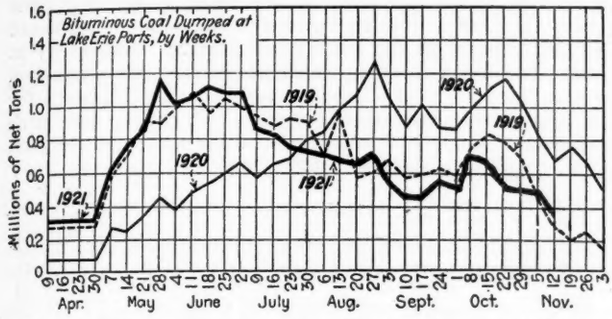
(Net Tons)

Week Ended	1921	1920
BITUMINOUS COAL		
Oct. 22 (b)	11,049,000	12,232,000
Oct. 29 (b)	10,968,000	12,407,000
Nov. 5 (a)	9,344,000	11,429,000
Daily average	1,557,000	2,078,000
Calendar year	347,565,000	460,217,000
Daily average calendar year	1,329,000	1,757,000
ANTHRACITE		
Oct. 22	1,942,000	1,969,000
Oct. 29	1,780,000	1,743,000
Nov. 5 (a)	1,716,000	1,429,000
Calendar year	75,149,000	74,838,000
COKE		
Oct. 29	102,000	422,000
Nov. 5 (a)	115,000	385,000
Calendar year	4,611,000	18,073,000

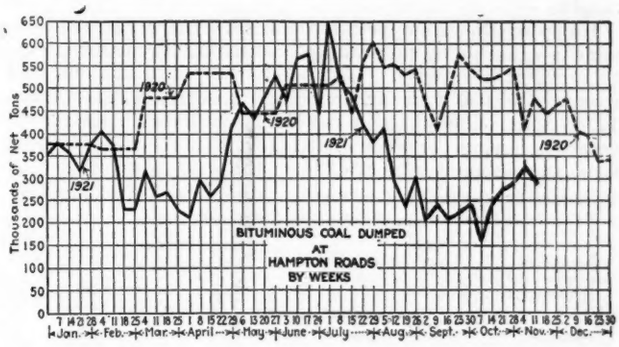
(a) Subject to revision. (b) Revised from last report.

110,000,000 tons less than the average of the last four years.

Markets everywhere are quiet, as an aftermath of a sales spurt when the two strikes threatened. Both union and non-union coals feel the sluggishness. Production appears to have been artificially stimulated and the coal trade is marking time until industrial improvement catches up with augmented stockpiles.



The all-rail movement to New England increased during the week ended Nov. 5. According to the Geological Survey, 3,548 cars were forwarded over the Hudson, compared with 2,971 cars in the week preceding. Much of this tonnage represents the delivery of orders placed when the strike threatened, and a decline in movement is expected. Pennsylvania producers are still at a disadvantage in those parts of this territory that are being reached by the water-borne coals, which are in more favorable position, due to the low range of coastwise freights as well as to the all-rail rates, which are sadly in need of adjustment.



The Lake movement is dragging to a close, although shippers expect to continue this business throughout the month. Dumpings during the week ended Nov. 14 were 369,648 net tons—359,776 cargo and 9,872 vessel fuel—compared with 668,950 tons in the corresponding week of 1920. Cumulative movement for the season to date is 22,342,043 tons; in 1920 it was 21,728,660 tons. Northwestern markets are

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

	Market Quoted	Oct. 10, 1921	Oct. 31, 1921	Nov. 7, 1921	Nov. 14, 1921†
Low-Volatile, Eastern					
Pocahontas lump	Columbus	$4.75	$4.80	$4.85	*$4.50@$5.00*
Pocahontas mine run	Columbus	2.75	2.55	2.55	*2.25@ 2.75*
Pocahontas screenings	Columbus	2.05	1.75	1.75	*1.25@ 2.00*
Pocahontas lump	Chicago	4.75	4.75	4.75	4.50@ 5.00
Pocahontas mine run	Chicago	2.60	3.15	3.15	*2.50@ 3.25*
*Smokeless mine run	Boston	4.85	4.80	4.80	4.75@ 4.90
Clearfield mine run	Boston	1.95	1.95	1.95	1.75@ 2.15
Cambria mine run	Boston	2.40	2.45	2.45	2.10@ 2.75
Somerset mine run	Boston	1.85	1.90	1.90	1.60@ 2.15
Pool 1 (Navy Standard)	New York	3.15	3.25	3.20	*2.90@ 3.25*
Pool 1 (Navy Standard)	Philadelphia	3.10	3.15	3.15	3.00@ 3.30
Pool 1 (Navy Standard)	Baltimore	2.75	2.65	2.65	**2.60@ 2.75**
Pool 9 (Super. Low Vol.)	New York	2.40	2.65	2.50	*2.25@ 2.60*
Pool 9 (Super. Low Vol.)	Philadelphia	2.40	2.45	2.45	2.25@ 2.60
Pool 9 (Super. Low Vol.)	Baltimore	2.45	2.45	2.35	**2.35@ 2.45**
Pool 10 (H. Gr. Low Vol.)	New York	2.15	2.30	2.15	2.00@ 2.25
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2.05	2.15	2.15	2.00@ 2.25
Pool 10 (H. Gr. Low Vol.)	Baltimore	2.30	2.20	2.10	2.10
Pool 11 (Low Vol.)	New York	1.80	1.85	1.85	**1.75@ 2.00**
Pool 11 (Low Vol.)	Philadelphia	1.85	1.85	1.85	1.75@ 2.00
Pool 11 (Low Vol.)	Baltimore	2.10	2.00	1.85	**2.00**
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.75	1.85	1.65	**1.60@ 1.75**
Pool 54-64 (Gas and St.)	Philadelphia	1.75	1.75	1.70	1.65@ 1.80
Pool 54-64 (Gas and St.)	Baltimore	1.85	1.75	1.65	1.50@ 1.80
Pittsburgh se'd gas	Pittsburgh	2.65	2.65	2.65	2.60@ 2.70
Pittsburgh mine run (St.)	Pittsburgh	2.20	2.15	2.15	2.10@ 2.20
Pittsburgh slack (Gas)	Pittsburgh	2.15	1.65	1.65	*1.50@ 1.60*
Kanawha lump	Columbus	3.20	3.30	3.25	**3.25@ 3.50**
Kanawha mine run	Columbus	1.95	2.15	2.05	*1.90@ 2.15*
Kanawha screenings	Columbus	1.20	1.25	1.10	**1.00@ 1.30**
Hocking lump	Columbus	3.20	3.25	3.25	3.00@ 3.50
Hocking mine run	Columbus	2.00	2.05	2.10	2.00@ 2.20
Hocking screenings	Columbus	1.05	1.10	1.10	1.00@ 1.20
Pitts. No. 8 lump	Cleveland	3.25	3.25	3.25	3.00@ 3.50
Pitts. No. 8 mine run	Cleveland	2.20	2.15	2.15	*$2.05@$2.15*
Pitts. No. 8 screenings	Cleveland	1.55	1.55	1.60	*1.35@ 1.40*
Midwest					
Franklin, Ill. lump	Chicago	3.80	3.75	3.65	3.25@ 4.05
Franklin, Ill. mine run	Chicago	2.70	2.75	2.90	**2.75@ 3.50**
Franklin, Ill. screenings	Chicago	1.40	1.60	1.60	*1.25@ 1.75*
Central, Ill. lump	Chicago	2.50	2.50	3.50	3.25@ 3.75
Central, Ill. mine run	Chicago	2.25	2.25	2.50	**2.25@ 3.00**
Central, Ill. screenings	Chicago	1.45	1.60	1.85	*1.00@ 2.25*
Ind. 4th Vein lump	Chicago	2.95	2.95	3.55	3.00@ 4.05
Ind. 4th Vein mine run	Chicago	2.55	2.35	2.90	*2.40@ 3.25*
Ind. 4th Vein screenings	Chicago	1.50	1.55	1.75	**1.40@ 2.50**
Ind. 5th Vein lump	Chicago	2.70	2.70	2.70	**2.60@ 3.50**
Ind. 5th Vein mine run	Chicago	2.50	2.35	2.45	2.15@ 2.75
Ind. 5th Vein screenings	Chicago	1.45	1.55	1.75	**1.25@ 2.50**
Standard lump	St. Louis	3.40	3.35	3.35	*3.00@ 3.25*
Standard mine run	St. Louis	1.85	1.95	1.95	**2.00@ 2.10**
Standard screenings	St. Louis	0.55	0.90	0.75	**0.75@ 1.00**
West. Ky. lump	Louisville	2.95	2.90	3.25	*2.75@ 3.25*
West Ky. mine run	Louisville	2.25	2.45	2.20	*1.75@ 2.25*
West Ky. screenings	Louisville	1.30	1.10	0.85	**0.40@ 1.50**
South and Southwest					
Big Seam lump	Birmingham	3.75	3.75	3.75	3.25@ 4.25
Big Seam mine run	Birmingham	2.15	2.15	2.15	2.00@ 2.25
Big Seam (washed)	Birmingham	2.30	2.30	2.30	2.15@ 2.40
S. E. Ky. lump	Louisville	3.65	4.00	3.75	**3.75@ 4.00**
S. E. Ky. mine run	Louisville	2.20	2.20	2.30	*2.00@ 2.25*
S. E. Ky. screenings	Louisville	1.25	1.30	1.30	**1.30@ 1.60**
Kansas lump	**Kansas City**	.....	5.75	.....	.....
Kansas mine run	**Kansas City**	.....	4.00	.....	.....
Kansas screenings	**Kansas City**	.....	2.40	.....	.....

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	Oct. 31, 1921		Nov. 7, 1921		Nov. 14, 1921†	
			Independent	Company	Independent	Company	Independent	Company
Broken	New York	$2.61	.....	$7.60@$7.75	.....	$7.60@$7.75	.....	$7.60@$7.75
Broken	Philadelphia	2.66	$7.60@$8.20	7.75@ 7.85	$7.60@$8.20	7.75@ 7.85	$7.60@$8.20	7.75@ 7.85
Broken	Chicago	5.63	13.40*	12.80*	13.40*	12.80*	.....	.....
Egg	New York	2.61	8.00@ 8.25	7.60@ 7.75	8.00@ 8.25	7.60@ 7.75	**8.00@ 8.40**	7.60@ 7.75
Egg	Philadelphia	2.66	8.10@ 8.35	7.75@ 7.85	8.10@ 8.35	7.75@ 7.85	8.10@ 8.35	7.75@ 7.85
Egg	Chicago	5.63	13.40*	12.80*	13.40*	12.80*	**8.00****	7.15**
Stove	New York	2.61	8.50@ 9.00	7.90@ 8.10	8.50@ 9.00	7.90@ 8.10	**8.75@ 9.25**	7.90@ 8.10
Stove	Philadelphia	2.66	8.50@ 8.75	8.00@ 8.35	8.50@ 8.75	8.00@ 8.35	**8.75@ 9.00**	8.00@ 8.35
Stove	Chicago	5.63	13.40*	12.90*	13.40*	12.90*	**8.50****	**7.40****
Chestnut	New York	2.61	8.50@ 9.00	7.90@ 8.10	8.50@ 9.00	7.90@ 8.10	**8.75@ 9.25**	7.90@ 8.10
Chestnut	Philadelphia	2.66	8.25@ 8.75	8.05@ 8.25	8.25@ 8.75	8.05@ 8.25	**8.50@ 9.00**	8.05@ 8.25
Chestnut	Chicago	5.63	13.40*	12.80*	13.40*	12.80*	**8.25****	**7.40****
Pea	New York	2.47	5.75@ 6.00	6.05@ 6.45	5.75@ 6.00	6.05@ 6.45	*5.50@ 6.00*	6.05@ 6.45
Pea	Philadelphia	2.38	5.00@ 5.50	6.15@ 6.25	5.00@ 5.50	6.15@ 6.25	5.00@ 5.50	6.15@ 6.25
Pea	Chicago	5.63	12.40*	11.15*	12.40*	11.15*	*6.60***	**5.80****
Buckwheat No. 1	New York	2.47	3.25@ 3.50	3.50	2.75@ 3.25	3.50	*2.50@ 3.25*	3.50
Buckwheat No. 1	Philadelphia	2.38	2.75@ 3.50	3.50	2.75@ 3.50	3.50	*2.75@ 3.25*	3.50
Rice	New York	2.47	2.15@ 2.50	2.50	2.15@ 2 40	2.50	*2.00@ 2.40*	2.50
Rice	Philadelphia	2.38	1.75@ 2.25	2.50	1.75@ 2.25	2.50	1.75@ 2.25	2.50
Barley	New York	2.47	1.25@ 1.50	1.50	1.25@ 1.50	1.50	*1.25@ 1.50*	1.50
Barley	Philadelphia	2.38	1.10@ 1.25	1.50	1.10@ 1.25	1.50	1.00@ 1.25	1.50
Birdseye	New York	2.47	.....	2.50	.....	2.50	.....	2.50

*Prices and freight rates, net tons; quotations f.o.b. cars, Chicago.
†Advances over previous week shown in **heavy type**, declines in *italics*.
**Net tons, f. o. b. mines.

dull and buyers are holding down their orders in the hope that lowered freights may yet come in time to affect their fuel budgets for this year. This may prove a dangerous policy, for an early winter would throw an abnormal demand into a period when transportation difficulties are at their height.

Hampton Roads shippers feel the universal dullness. Tonnage is again piling up at the piers, despite strenuous efforts to move it coastwise. Last week the accumulations had reached 300,000 tons and waiting vessels aggregated but 10,000 tons. Dumpings at the Hampton Roads piers for all accounts during the week ended Nov. 10 were 251,961 gross tons, as compared with 294,334 in the week preceding.

TIDEWATER BITUMINOUS COAL SHIPMENTS FOR OCTOBER, 1921
(In Thousands of Net Tons)

Destination	New York	Phila.	Balto.	Hamp. Rds.	Charleston	Total Oct.	Total Sept.
Coastwise to New England	142	58	85	702	..	987	809
Exports	....	35	28	190	18	271	210
Bunker	255	37	19	190	1	502	492
Inside capes	....	196	96	28	..	320	279
Other tonnage	658	2	7	65	..	732	623
Oct. Total	1,055	328	235	1,175	19	2,812	....
Sept. Total	917	236	255	991	14	.....	2,413

With the exception of a single cargo to Italy last week, the European market remains inactive. C.i.f quotations are being hammered down but there is yet too much price difference in favor of British coals. The South American market occupied the limelight last week and exporters were figuring on bids for the Brazilian State Railways, which were reported to be in the market for 150,000 tons with a spread over 1922.

ANTHRACITE

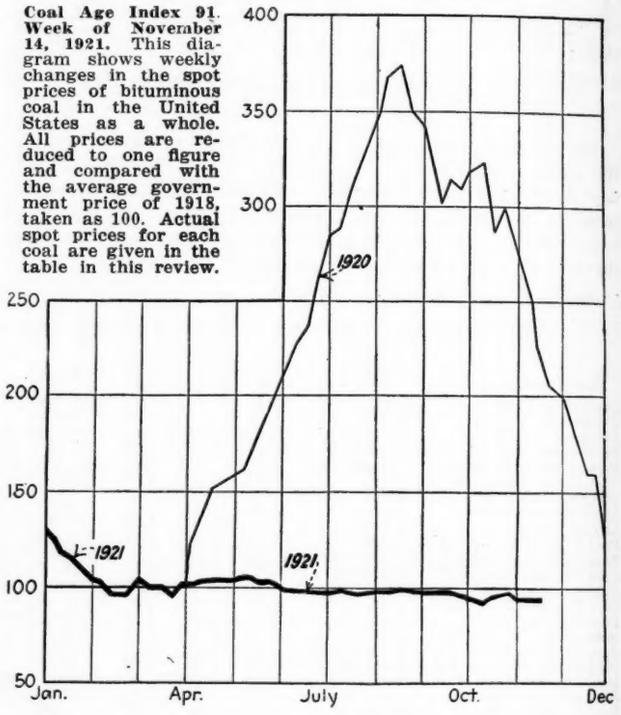
Production of hard coal was affected by holidays near the close of October and the early part of November. This and not any lack of demand cut the output for the week ended Nov. 5 to 1,716,000 net tons. The latest full-time week—Oct. 22—showed a tonnage of 1,942,000.

New England is absorbing an increasing volume of anthracite. During the first week of November 3,309 cars were forwarded over the Hudson, 101 cars more than in the preceding week. Lake dumpings reflect the approach of the end of the navigation season—during the week ended Nov. 9 there were 68,600 net tons loaded as compared with 106,400 in the preceding week.

Stove size continues to lead the demand, and independent prices have strengthened accordingly. Egg and pea are long and some shippers are selling stove and nut in conjunction with these grades. Steam coals feel the reaction in the bituminous market and independent prices have softened a trifle.

COKE

Production of beehive coke was 115,000 net tons in the week ended Nov. 5, according to the Geological Survey. The increase of 13,000 tons over the preceding week reflects the slowly improving iron business; in fact, there is no doubt but that production has outstripped demand, temporarily at least. The Frick company continues to increase production despite the softer coke market, largely to provide work for its employees. Byproduct coke is still being purchased wherever possible and will be until the iron and steel industry gains considerable momentum.



Coal Age Index 91. Week of November 14, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.

Foreign Market And Export News

Coastwise Slump Affects Hampton Roads; Accumulations Increase; South American Market Offers Export Outlet

Business was dull at Hampton Roads last week, with coastwise movement falling off slightly and with foreign cargoes negligible. Prices took a slight drop in an effort to stimulate trade, but with little effect.

Accumulations of stocks at Tidewater increased, apparently carried on the momentum of the business which obtained during the latter part of October but which has not held up. Fear of demurrage has prompted many shippers to make flattering offers for immediate shipment, but little activity in the spot market has been seen.

The bunker business is still brisk, although the majority of the sales are on contract, with few chances for operations on the spot. The hope of revived industry in the North is still held out by dealers as the only source of optimism for the immediate future. A gradual decline in New England business has taken place since the railroad strike was called off.

The general tone of the market is weak, with a very listless atmosphere throughout. It is expected that the approach of midwinter will stimulate the trade in domestic coals, particularly in the northern states, thereby involving the coastwise business.

Nearly 300,000 tons of coal are on hand at the piers, with vessel tonnage approximating only 30,000. At the Newport News piers the vessel tonnage was reduced to nothing. These piers, handling high-volatile coals very largely, have felt the decline in business particularly.

Foreign markets are extremely inactive and the only substantial business in sight is a contract to be let by the Brazilian State Railways. Bids on this South American business have been requested, the tonnage involved being placed around 150,000, on a c.i.f. basis at Rio de Janeiro, deliveries to commence Jan. 1. A peculiar uncertainty exists, as the Brazilians have named an arbitrary figure of $9 or less, while exporters are not sure of their ability to quote on that basis, with the prevailing ocean freights.

Coal Paragraphs from Foreign Lands

GERMANY—The production of coal in the Ruhr region during the week ended Oct. 29 was 1,776,000 metric tons, according to a cable to *Coal Age*. This is a slight decline as compared with 1,803,000 tons for the preceding week.

BELGIUM—The industrial coal market is unchanged, being weak with little demand. Household descriptions on the contrary show a fresh tendency to rise. There is a lack of stocks in these descriptions.

HOLLAND — The latest quotations in Rotterdam, cabled to *Coal Age*, are as follows: American gas $8; British steam 30s.

SWITZERLAND—The *Colliery Guardian* says that one of the present troubles of the Swiss State Railways seems to be that they have coal enough to last them for a year or more, coal bought when it was very dear and cost 150 fr. a ton. One of their last actions has been to purchase some stocks of English coal, which will come to only about 48 fr. a ton f.o.b. Dieppe.

British Fuel Undersells Coals at French Mines; French Producers Ask Government Aid

Declining Quotations in U. K. Show Necessity of Foreign Outlet—British Miners in More Conciliatory Mood, Accepting November Wage Scale—Some Pits Reopening with Lowered Production Costs

Considerable sensation has been caused in the French Northern coalfields by the appearance of British coal on the very fields themselves in competition with the local output, which is actually being undersold not only in Lille and other large towns but almost at the pit mouth. The price of the British coal on rail at Calais is 95.50 fr. as compared with 106 fr. for home coal of corresponding quality on rail at Comines.

Hitherto British competition in the Northern Departments has been confined to the Coastal region and this invasion of the Inland markets has caused great perturbation among the French mine owners. The only way of countering this new competition is to lower their own prices, but this can only be done at once by reducing wages.

There are difficulties in the way which prevent the immediate adoption of this step. There is already a shortage of miners, and there would be a further falling off if the wages paid were not in proportion to those paid in other industries. Operators are to hold a conference at Douai. It is probable that this conference will send a deputation to the Minister of Public Works to ask him not to check the importation of British coal by prohibitive tariffs, but to give the industry aid in other ways, especially such as will enable it to recruit more hands. There are some, however, who think that an early reduction of wages, which are now five times what they were in 1914, cannot be avoided especially as there is a possibility of the Belgian mine owners also invading the Northern markets.

The delivery of German reparation coal up to the end of September included the following: 5,344,956 tons of coal, 2,227,955 tons of coke, and 271,334 tons of lignite briquets; or a grand total for the three quarters of 7,844,246 tons. In September deliveries included 619,556 tons of coal, 253,118 tons of coke, and 42,327 tons of lignite briquets.

British Solving Wage Problems

British production is proceeding evenly. During the week ended Oct. 22 the output was 4,235,800 gross tons, as compared with 4,238,000 tons in the week preceding. Export quotations, cabled to *Coal Age*, show further reductions.

The Far East is sending in more inquiries, totaling more than 200,000 tons, for shipment over the next four months. Newcastle reports an Indian inquiry for 50,000 tons of steam coals. Australia is understood to be competing for this business. Heavy tonnages of coal are on track which also tend to depress quotations.

British press advices show an interesting statement of present day production costs and prices compared with the year 1913. September prices averaged 30s. 6d. per ton, 220.5 per cent over the 1913 figure of 13s. 10d. Wages rose from 6s. 10½d. in 1913 to 21s. 8d. in September, 1921, an increase of 315.2 per cent of the 1913 average.

Wages in the South Wales area have been adjusted for November on the basis of the auditors' report. These wages are now 28.95 per cent on the 1915 standard. This means that piece work miners are to receive 11s. 3d. per day, underground day wage men average 9s. 3d. per day, and the lower paid surface men 7s. per day. The drop amounts to about 4s. or 5s. per day compared with September. Miners' wages in Yorkshire, Derby, Nottinghamshire, Leicester, Warwick and Cannockchase will be reduced by 29.64 per cent on the 1915 standard, so that their November rate will be 110.55 per cent of the base. The arbitrator's award in the South Wales coal dispute means that the whole of the August receipts above the wage scale are to go in wages. The payment, as decided by the arbitrator, of 79.03 per cent on the 1915 wage also means that all July profits will go in wages.

The Yorkshire Miners' Association have charged the owners with breaking their agreements by endeavoring to obtain a reduction in tonnage rates, and that some men had been given notice because they would not agree to work for 5s. per day. In reply to this charge the owners say that the only alternatives to the securing of cooperation of their men in keeping the pits open by an economic adjustment of wages is either to run at a loss or to close the pits altogether. In a statement the owners say they are striving to avert the catastrophe of another stoppage, as threatened by the miners, but they cannot accept the implied suggestion that they should run their business at a loss to maintain wages at an artificial level. This virtually means that the owners cannot pay the agreed wages and that the only alternative to a lower wage is closed pits.

More colleries are closing down. A Glasgow concern has closed because it cannot pay the arbitrator's wage, while another colliery has closed because of excessively low output. Out of 200,000 miners in South Wales 80,000 are now idle, while in Lanark 10 additional pits have closed down. The total unemployment among the miners amounts to 175,000 while 73 per cent of those employed are now working three shifts per week. In these circumstances the outlook for November, when the owners are due to take their share of profits, is distinctly discouraging.

Another step in the dissolution of the miners' federation is shown by a decision, by a large majority, of the Durham County Colliery Enginemen to withdraw from that body. A group of collieries in the Forest of Dean have broken away from the Mining Association and the District Board, and have informed their employees that they will be paid the district wage, while any profits over 10 per cent of the company's capital will be divided equally between shareholders and workmen.

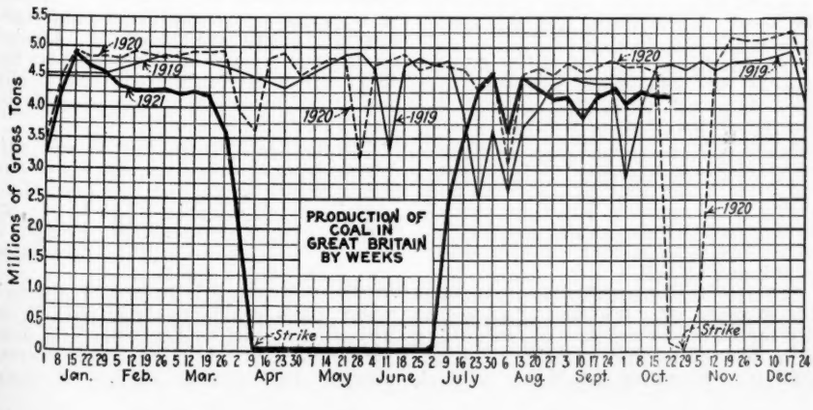
The Northumberland Miners' Association is ready to make sacrifices to keep the industry going and the executive of that body has supported the action of those men who have offered to accept a lower wage to keep the pits in operation.

A colliery in Glamorgan, one of the largest in the Avon Valley, which has been closed for some months, has decided to reopen now that miners have approached the owners and promised to increase their output.

More collieries in Durham in Derbyshire have closed, throwing out of work about 5,000 more men. November wages are being reduced in the Durham by 55 per cent and in Northumberland 91 per cent. On account of the consequent lower costs of production some pits are expected to reopen. More forks vs. shovels controversies are being carried on, notably in Leicestershire.

The Cardiff Chamber of Commerce has convened a conference at which it was stated that from Nov. 1 the charges by the railways were reduced from 150 to 125 per cent on the 1913 rates for tonnage dues, crane hire, mixing coal for shipment, discharging, ballast and wharfage at docks and harbors at Cardiff and other South Wales ports.

Reports indicate a total of nearly £7,000,000 for army expenditures occasioned by the recent coal miners' strike.



Export Clearances, Week Ended Nov. 10

FROM HAMPTON ROADS

	Tons
For Atlantic Islands:	
Am. SS. Glyndon, for Cayo Mambi	469
For Canada:	
Russ. SS. Tobolsk, for Bathhurst, N. B.	2,110
For Brazil:	
Ital. SS. Piave, for Buenos Aires	7,012
Br. SS. Caithness, for Buenos Aires	5,154
For Italy:	
Br. SS. M. S. Dollar, for Genoa	10,000
For Peru:	
Br. SS. South American, for Lima	551
Am. Schr. Horace A. Stone, for Covernas	1,931
Nor. SS. Bur, for Fort de France	6,358
Am. SS. Callabasas, for Tanamo	974

Pier and Bunker Prices, Gross Tons

(Foreign Bunker Quotations by Cable to Coal Age)

PIERS

	Nov. 5	Nov. 12†
Pool 9, New York	$5.80@$5.90	*$5.65@$5.75*
Pool 10, New York	5.60@ 5.75	*5.45@ 5.50*
Pool 9, Philadelphia	5.75@ 5.95	*5.70@ 5.90*
Pool 10, Philadelphia	5.50@ 5.75	*5.50@ 5.65*
Pool 71, Philadelphia	6.00@ 6.20	*6.00@ 6.10*
Pool 1, Hamp. Rds.	4.75@ 5.00	*4.75@ 4.90*
Pools 5-6-7 Hamp. Rds.	4.25	4.25
Pool 2, Hamp. Rds.	4.50@ 4.75	*4.60*

BUNKERS

Pool 9, New York	$6.15@$6.25	*$6.05@$6.15*
Pool 10, New York	5.95@ 6.15	*5.85@ 5.90*
Pool 9, Philadelphia	6.00@ 6.25	*6.00@ 6.20*
Pool 10, Philadelphia	5.75@ 6.00	5.75@ 6.00
Pool 1, Hamp Rds.	5.15	*5.05*
Pool 2, Hamp. Rds.	4.90	*4.75*
Welsh, Gibraltar	47s. 6d. f.o.b.	45s. f.o.b.
Welsh, Rio de Janeiro	65s. f.o.b.	65s. f.o.b.
Welsh, Lisbon	57s. 6d. f.o.b.	52s. f.o.b.
Welsh, La Plata	60s. f.o.b.	60s. f.o b.
Welsh, Marseilles	125 fr.	125 fr.
Belgian, Antwerp	40s.	40s.
Alexandria	48s. f.o.b.	48s. f.o.b.
Bombay	35 rupees	35 rupees
Capetown	42s. 9d.	42s. 9d.

C.I.F. Prices, American Coal

(In Gross Tons)

	—Nov. 5— Low Vol.	High Vol.	—Nov. 12†— Low Vol.	High Vol.
French Atlantic	$9.00	$8.85	*$8.90*	*$8.65*
West Italy	8.90	8.70	*8.80*	*8.60*
The Plate	9.75	9.60	*9.60*	*9.35*
Rio Janeiro	9.35	9.20	*9.20*	*9.00*
Scandinavia	....	....	9.50	9.20

These quotations are purely nominal and as far as can be learned, no business is being done in these markets.

Current Quotations British Coals f.o.b. Port, Gross Tons

Cardiff	Nov 5	Nov. 12†
Admiralty Large	27s. 6d.	*26s.6d.@27s.*
Steam, Smalls	19s.	18s.6d.@19s.6d.
Newcastle:		
Best Steams	23s. 3d.	*22s. 6d @23s*
Best Gas	24s. 3d.	24s.@24s. 6d.
Best Bunkers	23s. 3d.	23s.@23s. 6d.

†Advance over previous week shown in **heavy type**, declines in *italics*.

Hampton Roads Piers Again Show Tonnage Accumulations

	— Week Ended — Nov. 3	Nov. 10
N. & W. Piers, Lamberts Pt.:		
Cars on hand	1,588	2,223
Tons on hand	79,064	124,544
Tons dumped for week	139,061	111,633
Tonnage waiting	21,325	10,250
Virginian Ry. Piers, Sewalls Pt.:		
Cars on hand	1,363	1,533
Tons on hand	68,150	76,650
Tons dumped for week	111,781	109,991
Tonnage waiting	28,302	10,670
C. & O. Piers, Newport News:		
Cars on hand	947	1,191
Tons on hand	47,350	59,850
Tons dumped for week	43,492	30,337
Tonnage waiting	2,710	2,000

Swedish Imports Increase

SWEDEN—During the last week in October imports of coal at Stockholm totaled about 14,200 tons. Figures published by the Board of Trade show that an increase in imports occurred during September, 306,500 tons of coal coming into the country compared with 154,000 tons in August, the September figure being the highest this year.

SPAIN—The prices for Asturian coal have at last been brought down to the level of British figures. At Barcelona the following rates are quoted: Screened 95@100 pesetas; large 90@95 and small 75. British coals, however, are still given the preference by Spanish industries because of superior quality.

CHINA—The market is very quiet but with the time approaching for making next year's contracts, the Shanghai trade is instituting tentative inquiries as to consumers probable requirements.

Reports From the Market Centers

New England

BOSTON

Dull Market—Pennsylvania Operators Pressed to Find Outlet—Hampton Roads Shipments Still in Fair Volume —Coastwise Freights Unchanged—Active Demand for Popular Anthracite Sizes.

Bituminous — The current market is without apparent change from a week ago. Inquiry has fallen off, and receipts are beginning to recede noticeably. Buyers are again offish with respect to purchases for the next 30 days. A few industries, such as shoe manufactures, are on a somewhat better earning basis and in time this will spread to other manufactures and be reflected in a demand for steam coals, but the cherished day seems still far ahead. Purchasing agents are inclined to consult their own convenience, for there is now little confidence on their part in any material advance in prices the next few weeks.

No recent price movement has been observed. On Hampton Roads coals the range of quotations remains about the same. Some of the factors who rehandle coal over their own wharves and are therefore in position to retain coal in storage are asking slight advances from small buyers here and there, but the supply of market cargoes is fairly constant, and under the pressure to free vessels at railroad berths there are occasional sacrifice sales that are under $6 on cars, Boston or Providence. This low level is only spasmodic, however, and is made usually only to large buyers in position to take cargo lots. At the Norfolk and Newport News piers there are similar sales where prices have reached well below $4.75 f.o.b. on Navy Acceptable coal.

Pennsylvania producers have shown no disposition to shade the minimum prices they individually set for themselves some months ago. Perhaps at no time in the season has it been quite so difficult as just now to place coal in any volume. Many operators whose connections are ordinarily of the best are dragging on the bottom so far as new business is concerned. Large blocks of territory have been wiped out by the much lower prices that the smokeless interests have made, even though the net result to the latter will not afford them much satisfaction.

The Southern coals are being shipped here in fair volume on old sales, but there is bound to be less tonnage for November than came forward during October. There should also enter into calculation the quantity of Pocahontas and New River that has been shipped to the St. Lawrence River by the all-water route, here again driving out Pennsylvania coals that would normally be shipped all-rail.

Inquiry for coastwise bottoms has also dropped off. We hear of no actual charters at less rates, but something of a fleet of sailing vessels is accumulating at Hampton Roads due to slack demand and it is quite likely a low offer will be accepted in the near future and thereby establish a lower range of freights. On Long Island Sound for New York loading there was an effort to mark up rates for a few days, but it came to nothing and rates are on the same actual basis as a fortnight age; namely, 70c. to Providence, with 5c. more for New Bedford.

Anthracite—There is the same active demand for stove and chestnut that has prevailed since Sept. 15. Egg and pea are still draggy. Retail demand in Boston is quite brisk, and other cities share this improved state of trade.

Tidewater—East

NEW YORK

Mild Weather Affects Anthracite Demand—Bituminous Market Quiet—Quotations Easier—Industrial Improvement Slow.

Anthracite — Production during the past two weeks has been kept down, due to the various holidays. Such a loss in tonnage would usually be serious but it has not had an adverse affect in the present instance because dealers have fairly good stocks and the demand for certain sizes has been so light that the operators were just as well satisfied to have production curtailed.

The market could easily absorb increased shipments of stove and chestnut. Some retail dealers in Brooklyn have cut their delivery price on egg 50c. to $12.50.

Egg and pea are not expected to show much sign of life until the retail supplies have been considerably reduced by a continuation of colder weather.

Mild weather conditions are no doubt responsible for keeping independent quotations at the present level. While prices as high as $9.35 for stove coal have been heard, it is only in spots and then usually on straight lots. Chestnut is being quoted as high as $9.25 but most sales are reported around $9 unless the order calls for a substantial percentage of egg or pea. In New York the peddler trade is calling for a larger tonnage of chestnut and retail dealers are getting rid of some of their surplus.

Demand for the steam coals is erratic. There is a considerable surplus of buckwheat and rice in the local market and prices are unsettled. Loaded boats and tonnage on demurrage at the piers are being sacrificed occasionally for prices lower than those quoted for spot shipments at the mines.

Bituminous—The market is still suffering from the reaction that set in two weeks ago. Operations had been stimulated out of all proportion to the increase in actual requirements and it soon became apparent that production was going ahead too fast.

No stimulating influences are anticipated until colder weather puts in an appearance, but so far wholesale dealers see no forward business of any great volume for several weeks to come.

Awaiting only formal decision regarding the check-off system, it would appear that a goodly portion of the users who have only a minimum supply would be taking due precautions in the matter of their fuel requirements. Instead of that they are not even taking their usual amounts, but selecting choice offerings at low prices. With business entirely suspended for two days—Election and Armistice—and buyers not inclined to do much, the week was one of the quietest since back in the summer.

Much of the tonnage taken in during the latter part of last month by industrial consumers and public utilities would not have been called for until the present month had it not been for the danger of deliveries being interrupted by labor troubles. Consumers, as a result, are now asking to have contract shipments curtailed, and those who buy spot coals are out of the market for the time being because of the extra amounts bought.

There is considerable unsold coal at Tidewater that was brought down when it looked as if there would surely be a strike and this tends to make matters worse. This accumulation, however, it seems likely will be absorbed much more quietly than would have been the case a short time back, for consumption has increased materially since the summer months. Industry is speeding up gradually and salesmen and others who travel around report that factories in many different lines are operating on a much better scale than during the summer and that consumption of coal has increased accordingly.

Export business is still at low ebb, although there has been a sharp upturn in offshore shipments at Hampton Roads. Any substantial improvement is unlikely until a freight rate reduction puts exporters in better position to compete with British coal.

PHILADELPHIA

Anthracite Remains Quiet—Nut in Best Demand—Steam Coals Lose Strength—Retail Prices Fluctuate Downward—Bituminous Is Overstocked—Market Stagnant.

Anthracite—Even with normal weather the consumer is buying in small lots. The dealers are fearful that the winter will not be as productive of business as anticipated. The belief grows that it may not be advisable to carry heavy stocks, but with the season so young they hesitate to hold shipments.

The buying is centered on nut and all dealers are urging further shipments of it. Most of them now have plenty of stove. Egg and pea are still in the undesirable class. Shipping houses are receiving some holders on pea and the outlook for this size is not at all promising.

There is an increasing restlessness among the retailers as to prices, and the number selling coal at $14@$14.25 seems to be growing. This cutting from the standard price of $14.50 is not done openly, but the consumer shopping around soon learns of it.

So anxious are some for business that in one section of the city a dealer hung out a sign of $10 for pea, the consumer to arrange for his own delivery. This looked like a heavy cut from $12.25, but some consumers quickly learned what overhead means in the retail business, when drayman charged them $2@$3 to make delivery.

There is still some inclination among smaller shippers to cut prices on the slow moving sizes, particularly pea. This week there were numerous quotations heard of $5@$5.50 on ordinary qualities of pea coal. While the price was somewhat tempting compared to company circular of $6.20, yet sales were few, as the dealers realized that they must take this size in a fair proportion from regular shippers in order to insure a supply of the needed sizes.

Steam sizes seem to lose a little of the toning up that was apparent a few weeks ago, although barley still is in good demand and the better grades not at all easily obtained. Rice has been weak right along but buckwheat, which has been improving until recently, seems to have fallen back a bit.

Bituminous—The trade is now suffering from the effects of the moderate stocking of coal that took place in anticipation of strikes. Concerns with a fair stock ahead are not at all inclined to take in any more. During the past week buying has been almost at a minimum.

So far as weather is concerned it has been close to normal, if not entirely so, yet the stagnation of buying continues. After the quiet summer, which was akin to the olden days, the selling agencies also expected that when they had gotten thus far into fall the seasonal buying would also approach something like normal.

In the way of prices the scale as reached a few days following the calling off of the rail strike is still effective in a general way. The producer continues certain that this is low for the year, yet the consumer under present conditions of light buying is prone to insist that even lower prices are probable, and there are occasional instances where some cuts have been made to move coal in blocks.

BALTIMORE

Stronger Tone to Bituminous Trade—Prices Responding Slowly—Trade Optimism Felt—Almost Normal Seasonal Demand for Anthracite.

Bituminous—The slowly but surely growing spirit of a renewed optimism in the general business world is being reflected in a better tone to soft coal trading. The demand at present is by no means of a noteworthy character, and supplies are ready at once for any and every inquiry but the fact remains that there is a more hopeful feeling in coal offices of a much brighter future.

Price reflection of this tone has not been marked, although the better grades are slightly stronger. The more exclusive coals are selling $2.60 and up while other fuels of excellent quality are selling over a range of $2.35@$2.50. Low grade fuels show little or no change as it is too easy to get good coals at low prices for the less desirable to figure much in the market.

A hopeful feature in this section is that the reserve industrial supply is very light. Any decided industrial betterment, therefore, will naturally mean a fairly lively demand. A traffic congested by snow and sleet would bring a quick demand and turn-over coal would naturally soar in price.

If the winter remains an open one there will be little difficulty in supplying fuel, as it will merely mean the resumption of idle mining groups and the release from sidings of idle rolling stock.

Anthracite—Dealers report an almost normal seasonal demand. This does not mean that the consumers of Baltimore and the nearby territory have laid in the usual amount, as the cellars of Baltimore as a whole are now probably around 135,000 tons short of normal. This is due to the fact that while in former years consumers had been in the habit of storing a full winter's supply, a great portion this year have bought, but one, two or three tons to date and will expect mid-winter deliveries to take care of them in the period after the first of the year.

Again the question of whether the winter is to be open or not will play a big part in the situation to develop later. Meanwhile the present run of orders is about what usually comes in late November. Receipts here have improved recently as compared with August, September and October, and this has given the yards some little reserve.

BUFFALO

Not Much Bituminous Demand—No Early Improvement Likely—Anthracite Market Strengthens—Lake Loadings Slump.

Bituminous—Demand is very light. Business seems to improve, but at such a slow rate that in many lines it is not of much account. There is really little to warrant normal trade for a while yet. The shippers are doing as best they can. Consumers are so loaded up with coal that they cannot carry any more, so that buying for awhile will not exceed consumption and in many cases will go below it.

For all that the winter outlook is not as bad as it was three months ago. The fear that so many men would be out of work that it might cause a sort of panic has given way to more employment until the list of idle men is comparatively small. If conditions go on improving, even if activities are slow in returning to normal, there will be no bad labor problem to face, here at least. Buffalo Harbor is full of work and the many cargoes of grain laying up to be handled through the winter will be a great help.

Buffalo has little coal on track, but a large amount is reported at Toronto. Quotations remain at $2.75 for Youghiogheny gas lump, $2.50 for Pittsburgh and No. 8 steam lump, $2.25 for Allegheny Valley and all mine run, $1.50@$1.75 for slack.

Anthracite—The supply is light, but the amount in consumers' hands is up to ordinary and will not be less, as it looks now. As yet the usual amount coming westward has not been received, and it is still said that more is shipped East than formerly.

The independent anthracite supply is pretty good and the demand enables its sale at a premium of $1. So long as the consumers will pay that, with some prospect of its still going considerably higher the complaint of excessive prices in the regular trade goes for little.

Lake—The small amount moving indicates the approach of the end of the season. The amount reported for the week ended Nov. 9 is only 68,600 net tons, of which 29,800 cleared for Milwaukee, 24,800 for Duluth, 9,000 for Sheboygan and 5,000 for Chicago. Shipments to Canadian ports have been next to nothing lately. Freight rates are easy at 65c.@70c. to Chicago, 60c. to Milwaukee, 55c. to Sheboygan and 50c. to Duluth.

Coke—As a rule the contracts held by furnaces are enough to supply them, so that the local jobbing trade gets an order only now and then. The condition of the local furnace trade is shown by the report that the Buffalo docks

have so far received only 1,051,580 tons by Lake this season, less than half of last year's receipts.

Coke prices remain at $4.50@$4.75 for 72-hour Connellsville foundry, $3.75 @$4 for 48-hour furnace and $3.25 for stock, adding $3.64 to cover freight to Buffalo.

Northwest

DULUTH

October Receipts Decline While Shipments Gain—Prices Stable—Market Is Quiet—Dock Supplies Ample.

Receipts showed a falling off during October, as compared with the corresponding month last year, the total being 808,260 tons of soft coal against 1,508,400 tons last October and 257,240 tons of hard coal against 271,600 tons. For the season to Nov. 1 receipts of soft coal aggregated 7,969,084 tons, an increase of 2,285,306 tons as compared with the same period last year. Hard-coal receipts were 1,671,840 tons against 347,641 tons last year.

In 1920 entire receipts were 7,393,-219 tons of bituminous and 1,637,477 tons of hard coal. It is assumed in trade circles that stocks of coal on the docks will be able to take care of Duluth and the Northwest for some time in the event that a miners' strike developes.

Movement from the docks during October to interior points was the heaviest for any month since February last year. The total is reported at 28,-722 cars as compared with 20,286 cars during October, 1920. September shipments were 18,735 cars, and August, 20,000 cars. Country demand has shown a slight falling off so far this month, due to warm weather and the settlement of the railroad strike.

Comparative figures of coal receipts as compiled by the Tomlinson Co., Duluth vessel agents, bear a close comparison with the government figures, soft coal receipts being placed at 7,994,-946 tons and hard coal receipts at 1,657,825 tons.

Prices remain practically unchanged. Rumor has it that one company has been cutting screenings to $3.50 from $4 but this could not be confirmed and seems unlikely in view of the fact that but 200,000 tons of screenings are on the local docks and one dock has been in the market to purchase 15,000 to cover its needs.

MINNEAPOLIS

Buying Still Low—Steam Prices Shaved —Further Stocking Delay Depends on Weather.

It is evident from the lack of demand heretofore, that people will not buy coal until they simply must have it. But the time is at hand when coal should be stocked if it is going to be this winter. However, the plan of holding off worked well a year ago, and many hope that it will have a similar effect this year.

Despite all previous incentives, buying has been confined to a narrow channel. The rail strike promised to urge a little pickup of business, but it was limited and tapered off as the season advanced. Now comes the suggestion of a general strike in resentment to the court ruling on the check-off, but already there are indications that this will not be effective in any large territory. And still the coal buyers of the Northwest are not worried.

Buyers look at the reports of stocks of coal, both soft and hard, on the Lake Superior docks, and note that they are the largest since 1918. Whereupon they assure themselves that there is no need to worry, and relapse to the point of letting the coal men do all the worrying on the subject.

But if the late touch of winter proves the beginning of some seasonable weather coal buyers will arouse themselves to the possibility that they may have some interest in the question of securing fuel a little ahead of the time that it is to be consumed. Because they have had the service of mine and railroad awaiting their pleasure for months is no assurance that there may not soon come a time when the mine may have other orders accumulated ahead, or that the railroads may not be able to spot and move cars immediately upon demand. There may be such a thing as riding a buyers' market unduly, and receiving some unpleasant results therefrom.

Steam buyers are working hard for lower prices. Indiana coal priced at $2.40 at the mine was recently placed for a test lot with a local plant. After a trial of a car or so the buyer advised that the coal was all right, but it would not be used at a better price than $2.20 at the mine. The chances are that acceptance of this figure will be followed shortly by a request for a lower figure still.

MILWAUKEE

Market Remains Dull—Dock Yards Well Stocked—No Change in Prices.

Coal dealers continue to report a dull and listless market. The domestic trade has been livened a little by a spurt of wintry weather, but the country business as a whole seems to be beyond arousing. There will be no betterment, to all appearances, until sub-zero weather has an inning.

Hard coal is moving from the docks at a reasonably fair rate, but the sheds are filled to capacity practically all the time. As soon as enough coal is shipped to make sufficient room, another cargo is dumped into the hole. The soft coal yards are kept filled in the same way. There is a possibility that Milwaukee will have a number of storage cargoes afloat when navigation closes.

There is no change in prices of either hard or soft coal or of coke. Receipts by Lake are falling off as the season draws to a close. Usually the tendency is the other way. Thus far in November, 45,769 tons of anthracite, and 85,211 tons of soft coal, or 130,980 tons in all have been received. Last year November receipts of coal aggregated 439,778 tons.

Inland West

CHICAGO

Steam Market Weakened by Distress Non-Union Coal—Domestic Dealers Not Buying—Anthracite Trading Is Slow.

An erratic market has existed during the last week. After Judge Anderson's injunction against the check-off was temporarily set aside, the market reacted quickly, with prices on all steam coals slumping. Domestic coal is not necessarily weak. Rather, the trade is showing no interest and those operators who are still running are doing it on the surplus orders they had booked within the past two weeks when the demand was heavy.

Another element tending to depress the steam market came about by non-union operators shipping heavily on consignment. In a great many cases this coal has arrived at destination, and there is considerable difficulty in disposing of it. Coal consigned in this manner to Indianapolis has also hurt the market in that town for Indiana coal very seriously. The adventurous gentlemen who took this long shot have received such a severe burning that it will take more than a strike rumor next time to get them to repeat it.

Eastern coals are coming in in fairly large quantities. We are experiencing the first cold snap of the year, in fact, the thermometer is perhaps a little lower than it ought to be at this season. In spite of this, however, the demand for domestic coals is extremely dull. The dealers stocked up, first in anticipation of the railroad strike, and then in anticipation of the coal strike. Consequently, it will take more than a cold snap to bring them all back into the market again. Current quotations are shown in the Weekly Review.

Prices on prepared Pocahontas are holding firm. Mine run is selling 25c.@ 50c. off. Very little splint coal moved in during the past week, but receipts of Kentucky block were fairly heavy.

COLUMBUS

With Appeal from Check-off Injunction, Conditions Have Quieted Down—All Markets Are Slow—Lake Trade Still Holding.

Consumers are apparently not much concerned in the check-off matter as there was practically no increase in demand as a result of the lay-off of many Ohio miners last week. Little change is expected until some definite decision is given by the courts.

The domestic trade is now a weather proposition. While colder weather has not stimulated the demand to any extent, still there is a better feeling and with continued low temperatures a fair call is anticipated. There is still considerable distress coal on track and this is being bought up by dealers in need of supplies. The retail trade is slightly better. Orders are generally for small lots. Prices are firm at former levels. Hocking lump sells at $6@$6.50; West Virginia splints $7.25 @$7.75 and Pocahontas $9.25@$9.50. Anthracite is rather firm around $15.

The steam trade shows little if any improvement in any section. Users who ordered rather freely when the railroad strike threatened are not in the market as their coal is now coming in. Public utilities and institutions are the best purchasers at this time, although some lines of manufacturing are increasing their fuel requisitions.

Lake trade is still showing some activity and will continue for the present month. The H. V. Docks at Toledo during the week ended Nov. 5 loaded 147,646 tons as compared with 176,752 tons the previous week, making 4,296,-130 tons for the season. During the same week the T. & O. C. docks loaded but 9,934 tons as compared with 22,900 tons the previous week, making 1,035,-039 tons for the season.

Production in Ohio fields, where not interfered with by the walkout, has been increasing. Owing to suspension of mining in many sections the latter part of last week, the records do not show up very well.

CLEVELAND

Markets Again Quiet—Strike Threats Caused Undue Spurt in Sales—Trade Slump Here Worse.

Sluggishness has reappeared in the coal market in this district. This is due largely to the lull following the flurry of buying incident to the threat of the railroad strike and, following that, the prospects of a coal strike. The improvement which was present for a few weeks was reflected in mine operations, which for the No. 8 district attained the high level of 75 per cent of capacity in the week ended Nov. 5, an increase of over 15 per cent.

The recession is not serious and most observers believe it is only temporary. There is a slight industrial relaxation reflected in the lessened buying of steel products, the result largely of the uncertainty over freight rates. Due to the fair accumulation of orders the steel mills are continuing operations at a good rate for the present. Indications are that buying will be resumed before the first of the year. The feeling is growing that freight rates will be reduced not later than in January.

Some explanation of the exceeding dullness in the coal trade is found in the fact that a record of bank transactions in the country disclose that the slump in the Cleveland district was greater than in any other. Compared with the third quarter of 1920, transactions dropped 31 per cent. Declines in other districts ranged down to 4 per cent.

As the winter creeps on the retail trade is meeting with a more active demand. The Lake season is virtually at an end.

Bituminous coal receipts for industries and retail dealers for the week ended Nov. 5 again registered a high mark and amounted to 1,898 cars; divided, 1,221 cars to industries and 677 for dealers.

CINCINNATI

Strike Flurries Leave Consumers Over-Stocked — Distress Tonnage Heavy — Retail Prices Stable.

The full force of the miscalculations made of the possibilities of a railway strike and the effect of the check-off bore home this week on the Cincinnati trade. Orders were practically nil and cancellations were numerous—this in the face of the fact that hundreds of "no-bills" were awaiting disposition in the yards of the C. & O. and the L. & N. To make matters even worse cars kept turning up all week at northern points where they had been shipped on consignment and precluded placing shipments in that part of Ohio and Michigan.

In the general tumble of prices that followed the effort to move the congestion, smokeless coal was hit least of all. A scant reduction of 25c. generally was all that the mines or jobbers saw fit to make to keep the coal moving. Spot lump could be bought around the $4-mark, although most of it kept moving at $4.25@$4.50. Other prices were, egg $4@$4.25, nut $3@$3.50, mine run $2@$2.75 and slack from $1.10 up.

There was a wide variation of prices for bituminous. Both Kentucky and West Virginia offerings sold: Lump $2.40@$3.50, mine run $1.40@$1.85; Kentucky slack 80c.@$1.10 and West Virginia $1@$1.25.

The flighty condition of the wholesale market failed to show any reflection on the retail situation, prices holding to the same spread as they have for the past three months: Smokeless $9.50@$10; mine run $7.50 and slack $6.25. Bituminous lump was $7.75, mine run $6@$6.50 and slack $4.50@$5.50.

DETROIT

Dullness Remains Dominant—Distress Tonnage Heavier—Anthracite Orders Confined to Small Lots.

Bituminous—There is almost no buying demand and efforts to arouse interest among consumers meet with discouraging lack of success. Some coal is being purchased but the quantity is small and the demand of an irregular nature.

Because of the shortened market for their products, many factories and steam plants are now running on low schedules, with greatly lessened fuel requirements. Buyers seem to be getting coal enough by picking up such bargains as come their way.

The impression that all railroad freight rates will be reduced and that freight charges on coal will be set at a lower level in the near future seems to be an added influence deterring some buyers from placing orders now. The idea seems to have spread that a reduction in transportation charges may be expected about Jan. 1.

Several brokers, in anticipation of a railroad strike, took a chance on increasing their shipments. They are now undergoing a troublesome ordeal in an effort to dispose of the coal. Almost any price is said to be acceptable in their dilemma.

West Virginia lump is quoted at $3.15 @$3.25, egg at $2.50, mine run $2, nut and slack $1.25. Ohio lump is $3@$3.25, egg $2.40, mine run $1.90, nut and slack $1.15@$1.25. Pittsburgh No. 8 1¼-in. is $2.40, ¾-in. lump $2.35, mine run $2.15, nut and slack $1.65. Smokeless lump and egg is $4.75, mine run $2.65, nut and slack $1.60.

Antracite—Lower temperatures with heavy snowfall has not yet increased the demand to the degree expected by dealers, who, owing to the earlier limited distribution, were looking for a rush of buyers. Orders are usually in small lots.

ST. LOUIS

Colder Weather Fails to Stimulate Market — Steam Unusually Quiet — Country Demand Is Slow.

A little cold weather has helped the local condition a trifle. There is some little domestic call for Standard coal, but other than that the dealer trade is quiet and all the yards are piled high with coal. As a result there is very little domestic moving to St. Louis. Country dealers are in pretty much the same position.

Steam is quiet. The acquired storage seems to be filling in for ordinary needs, with the result that the market has a tendency to slip some. The situation is also quiet in the country.

A pretty fair movement of coal has been going through St. Louis to Kansas City and Omaha until the last few days. Congestion at this point has held up shipments. Chicago movement is fairly good.

Very little anthracite is moving, but coke seems to be doing quite well. There is no change in price schedules.

South

BIRMINGHAM

Demand Extremely Light—Movement Confined to Contracts and Shipments to Furnaces — Domestic Trade Awaits Colder Weather.

The trade is now up against the dullest period that it has experienced in several months. There is slight demand for coal in the spot market, which has been the only channel where buying has been done in the past six months. Prior to the threatened rail strike there was some stocking on the part of consumers, both spot and contract customers, and this has been reflected in a slackened movement. Railroads and utilities are reported to have a sufficient supply on hand to rest easy and they are taking the minimum allowed and sometimes less.

The domestic situation is little if any better and no further activity is expected until a normal stage of winter weather sets in. Yards have full stocks on hand and are disposing of it at an extremely slow pace.

There have been no fluctuations of importance in either steam or domestic figures the past week and prices quoted in our last report are representative of the market at this time.

Increased production in this field is due alone to the large amount now required for coking purposes for furnace use. There are now twelve furnaces in operation as against five in blast Aug. 1. Commercial and domestic mines are still averaging about 50 per cent running time.

LOUISVILLE

Prices Slightly Weaker and Movement Light—Domestic Trade Awaits Colder Weather—Screenings Hard to Move.

Screenings are being absorbed a little better, due in part to the fact that production of prepared is slightly smaller. With some western Kentucky screenings at 40c.; some eastern Kentucky at 80c.@90c.; and West Virginia as low as 75c., it cannot be said that the market is doing much in the way of showing strength. Mine run continues inactive as a result of the cheap fine coal market. Prepared needs cold weather to move it freely enough to make for better price. General quotations are off around 25c. over top figures of a week ago on prepared sizes. Current quotations are shown in the Weekly Review.

During last week there was some demand from sections generally supplied by Indiana, as a result of the temporary miners' strike forcing a lot of inquiries into Kentucky.

While there is a good deal of pessimism expressed, business conditions in Louisville are about normal as a whole, and the outlook is improving. Bank clearings for the year to date are $1,009,624,312 as against $1,344,741,017 last year. Clearings for the week ended Nov. 5, were $23,397,110 as against $26,319,749 last year. October clearings were $101,474,725 as against $126,890,013 last year. The loss in dollars and cents has not been as great as the depreciation in the value of general commodities, and it is claimed that tonnage movement as a whole is larger here than last year, which would indicate normal coal consumption.

West

DENVER

Production Improves—Strike Threatens as Wage Cut Looms — Cheaper Coal Promised.

Just as production is reaching its stride of a year ago, union miners are threatening to strike if the Colorado Fuel & Iron Co. decides to cut wages 30 per cent, as it sought to do Sept. 1, when the company was prevented from so doing by the Colorado Industrial Commission, pending investigation, which only recently gave its decision, upholding the company's contention. The wage reduction will be announced soon.

The commission has held that the agreement between the company and the men looking to lower wages "Is not unreasonable or injurious to public interest." The union leaders insist that the minority could not be bound by the majority in accepting a new wage scale without proper notice being given the industrial commission.

Weekly production for the last half of October was 275,000 tons, averaging 70 per cent of full-time output, and 25,000 tons more than during the corresponding weeks of a year ago.

Cheaper coal was promised consumers at the time the Colorado Fuel & Iron Co. first sought to make a reduction in wages. Just what the outcome of the present development will show, company officials are reluctant to discuss.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

No Labor Developments—Market Stagnant—Demand Lower Than Ever.

There have been no new developments in the matter of the check-off since Nov. 7, when operators notified the district mine workers that their notice of discontinuance of the check-off was withdrawn by reason of the appeal granted at Chicago on Judge Anderson's check-off injunction. If the injunction prevails over the appeal the operators will of course discontinue the check-off at once. If the injunction does not become effective, the situation remains as stated in last report, that the operators will not consent to the check-off being included in any scale to be agreed upon for the period beginning April 1, 1922.

The market has been extremely dull since the possibility of a railroad strike disappeared. The threatened mine strike on the check-off produced no appreciable increase in demand. The present stagnation is due chiefly to stocks accumulated in the period when a rail strike was threatened. However, the market is even quieter than a week ago, instead of the quietness wearing off. The district is not feeling increased competition from non-union fields, for reports from the Connellsville region are of decreased activity there.

Slack continues to be a drug on the market, being produced in excess of demand by reason of the screening of gas coal. Prices are unchanged from a week ago, being nominal asking prices in the case of steam coal but actual trading prices in gas and domestic.

CONNELLSVILLE

Prices Declining Account of Overproduction—Consumers Prefer Byproduct Coke.

Market prices have suffered as a result of coke production being increased at too strong a pace for the increase in consumptive requirements. The condition of operators being somewhat precipitate in blowing in ovens has been referred to in each of these reports for the past three weeks. In the past ten days merchant ovens have been going out, after considerable tonnages of coke accumulated on track.

The overproduction of coke cannot be attributed to conditions in the iron trade having turned for the worse, nor did it represent a plain error of judgment on the part of coke operators. Rather it was psychological, the contemplation of idle ovens having become irksome to operators, who thereupon decided to take a chance on blowing in.

The September report of the Geological Survey shows production one-sixth beehive coke and five-sixths byproduct, showing a very slight gain in the beehive proportion, which in July was down to one-eighth. There is speculation as to when beehive coke will "come back" and indications are this will not occur until the byproduct ovens are running full, which would require a very fair degree of iron and steel activity, something that is not discernible for the nearby future. A price of $3.25 on spot furnace coke has changed from the minimum to the maximum, and can be shaded, possibly to $3. Contract furnace remains nominal at $3.35@$3.40. Spot foundry is still quotable $4.25@$4.75, but the $4.75 price is rarely obtained even for the best brands.

The *Courier* reports production in the week ended Nov. 5 at 29,000 tons by the furnace ovens and 38,400 tons by the merchant ovens, a total of 67,400 tons, an increase of 2,200 tons.

CENTRAL PENNSYLVANIA

Confusion in Check-Off Controversy—Operators Await Further Court Decision.

Following the issuance of Judge Anderson's check-off injunction, a meeting of the Central Pennsylvania Coal Producers' Association was held in Altoona and a resolution adopted setting forth that the system would be discontinued in the district.

Shortly after the meeting adjourned, word came from Chicago of the setting aside of that ruling relating to the check-off. The members of the association were immediately recalled, and in view of the sudden change it was decided to continue the collection of the check-off in the field until such time as the courts may decide otherwise.

Coal operators in the central Pennsylvania field largely welcomed the injunction and were keenly disappointed at the later turn of events. President John Brophy of District No. 2, U.M.W., issued a statement in which he terms the injunction a blow at the very heart of the union and called upon all union miners in the district to stick to their agreements and await the decision of the Federal courts.

The association members do not object to the check-weighman maintained at the union mines and so expressed themselves in a resolution at the meeting in Altoona.

UNIONTOWN

Softened Demand Fails to Halt Coke Production—Prices Weaker—Possibility of Lower Freights Delays Buying.

Although the coke market continues soft the H. C. Frick Coke Co. is steadily increasing its number of ovens in blast. On Nov. 12, a total of 600 were fired, distributed: Leisenring No. 2, 200; Lemont, 150; Youngstown, 150 and Colonial 175 ovens. The Leisenring and Colonial plants have been closed since last spring but the other plants have been working on transient orders for the Steel Corporation.

The coke market has been softened through a lack of demand, consumers who discontinued buying while the threat of a railroad strike was present not having returned as yet. The possibility of lower freight rates also is a contributing factor, orders for coke being limited to immediate needs instead of blast furnaces laying up stock piles against interrupted transportation due to weather conditions. While all concerned believe that reduced rates will eventually come there has been no indication when and the uncertainty has worked against buying for future needs.

The quotable market is fairly indefinite but a $3 figure for furnace coke has been connected with sales. Most operators, however, are inclined to be firm and quotations range up to $3.25. Foundry carries a quotation of $4.25 @$4.50.

ANTHRACITE

Demand Is Heavier—Holidays Cut Production—Steam Coals More Stable.

During the past week the demand for anthracite has been increasing. However, the output was reduced by the observance of Armistice Day, which was generally celebrated throughout the field. Election Day also caused many of the mines to be closed down.

Steam sizes are moving more freely and it is becoming difficult to secure them at prices below the standard company price. Stove continues to feed the domestic market.

EASTERN OHIO

Heavy Production Caused by Labor Threat—Market Reacts and Sluggishness Prevails—Prices Easier.

With the stimulated demand by reason of Judge Anderson's injunction concerning the check-off this field produced the maximum tonnage of the year during the week ended Nov. 5, namely, 464,000 tons, which is approximately 76 per cent of the total rated capacity. Cumulative production for the calendar year shows an aggregate of 15,303,000 tons as against a potential capacity of 27,525,000 tons.

The operators' association reports

that their mines worked 58 per cent of possible worktime as compared with 49 per cent the preceding week, and produced approximately 70 per cent of rated capacity. Time lost account "no markets" continue less than 35 per cent, and while the railroads are pretty well stocked, they are taking something over 35 per cent of the total output.

The operators' association took action to continue the check-off of dues from payrolls in line with the decree handed down by the United States Circuit Court of Appeals, Chicago, on Nov. 5.

Barometer reports from various industrial centers indicate that there was a definite pickup in business during the week, especially in the Youngstown district with the iron and steel industry, where a substantial lessening of unemployment reflected a general betterment.

However, so far as the coal trade is concerned, it is pretty generally felt that the high volume of tonnage mined during the past few weeks has been due to artificial conditions, and that consumption has been much less than the quantity produced; consequently, both industries and retail yards are now well stocked. The situation is expected to result in a lessening demand, temporarily at least.

Orders and inquiries have subsided during the past few days. Along with this lessening in demand there has been a softening in prices, particularly in slack.

It seems to be the opinion that the coal trade will continue quiet for the next few weeks, barring severe weather or the looming up of labor troubles at the mines by some unexpected developments in the present litigation in the Federal courts concerning the check-off.

FAIRMONT AND PANHANDLE

R.R. Orders Heavier—Prices Weaker—Production Still Cut by Sluggish Markets.

Fairmont

Mine idleness was very marked, with most operations shut down during the week ended Nov. 5. Production was heavier on the Morgantown and Wheeling R.R. than in any other field, some of the coal going to the Lakes. Tidewater shipments were small, and railroad fuel still constituted the bulk of production. Prices were slightly lower than at the close of October.

Northern Panhandle

Railroads were increasing their fuel orders which caused the output to rise to about 85,000 tons. Little steam coal was being moved, the bulk of production going to the West with some tonnage to Buffalo and Canada. A few inquiries were coming in, but only a small proportion of these were materializing into new orders.

UPPER POTOMAC

Conditions Fail to Improve — Prices Still Weak—Production Low.

Conditions were unimproved during the first week of November as compared with recent weeks. Production was largely at a standstill at most of the mines in the Upper Potomac and Georges Creek regions. Tucker County mines continued to operate at about 50 per cent of capacity and it was also possible to produce some coal in the Big Vein mines, otherwise inactivity reigned.

Middle Appalachian

LOW-VOLATILE FIELDS

Car Shortage Causes Heavier Losses—Markets Less Active—Slack Coal Declines.

New River and the Gulf

Production underwent a decrease in the New River field during the week ended Nov. 5. The reaction of the strike curtailed the output to about 40 per cent. Even with this low tonnage there were hardly enough opentops to go around. Demand was lacking for every grade except lump. Little coal was being exported, but some was moving to New England markets.

There was not so strong a market for Gulf coal and production was still held down to about 50 per cent. Many mines were not working at all. Although some coal was being sold for bunkerage the movement to Tide was not large.

Pocahontas and Tug River

Railroad disability was responsible for large gaps in the Pocahontas output, car shortage losses being nearly three times as large as "no markets." Most of the coal going to Tide found its way to the New England market. Prepared sizes were in good call in the West, but slack coal had increased its distress position.

Tug River production was also hampered by the lack of empties, the output being reduced to below 90,000 tons. There was a fairly good market especially in the West. The Tidewater movement was small. Price conditions closely paralleled those in the Pocahontas region.

HIGH-VOLATILE FIELDS

Production Declines — Car Shortage Causes Trouble—Markets Give Promise of More Activity.

Kanawha

Mines began the week ended Nov. 5 with an output of about 22,000 tons daily and ended with about 12,000, production being under 40 per cent. There were hardly more than enough opentop cars to meet requirements despite the limited number of operations. The only call was for domestic coal and the price on mine run accordingly tended downward.

Logan and Thacker

Logan production was greatly hampered by an inadequate car supply. Prices were on about the same level as during the preceding week, lump ranging $2.75@$3.75 and mine run $1.35 @$1.90.

Thacker mines were running at about 40 per cent of normal. No market losses were being reduced, but those from car shortage were increasing. The majority of the output was assigned to Western markets and railroad production was good. The check-off decision of Judge Anderson had a tendency to strengthen the morale of producers and workers in the region, where order has now been almost completely restored.

Northeastern Kentucky

As was expected, there was a reaction during the first week of November in the demand for coal, those who came into the market in anticipation of the strike being well stocked. The market for domestic grades was nearly as sluggish as for steam coals and production slumped accordingly.

Virginia

Notwithstanding an increasing number of inquiries prices remain firm. Production was maintained at about 60 per cent of capacity. In general, operators were somewhat more optimistic about the future and were confident that the better line of inquiries would soon increase the volume of business.

Middle West

WESTERN KENTUCKY

Demand Slower Following Check-Off Trouble — Steam Market Especially Dull. Screenings Moving Slightly Better.

With reports of snow in Michigan and Northern states, and colder weather here, it is believed that demand will pick up somewhat. Last week a very fair steam demand developed from Chicago and the North as a result of the walkout of miners in Indiana, but the demand was only temporary, although it aided materially in moving screenings.

Domestic demand is fair, but mine run and screenings are not moving as they should. Operators have been maintaining prices very well as a whole, but there has been considerable competition from cheap coal and distress fuel from other fields.

The mildest fall weather of years has not improved the situation materially in the South. Industrial conditions are improving slowly, but steadily.

MIDWEST REVIEW

Domestic Is Oversold—Other Coals Slump—Steam Stocks Heavy—Check-off Hearing Awaited with Interest.

As was expected, the market took a decided slump last week. This reaction from the strength of the week previous was caused almost entirely by the temporary settlement of the check-off fight. It is anticipated that market conditions will be extremely dull until after Nov. 16, when the check-off case again comes up for a hearing in the Circuit Court at Chicago, under Judges Carpenter, Evans and Alschuler.

The domestic market has been fairly firm, but this strength has not been derived on account of the demand, but entirely because many operators oversold their domestic output during the last two weeks, when the market was good. Few cancellations have been received, but to make up for this, practically no new orders have been placed.

It is expected that domestic prices will remain at the present level or go higher later on in the season. Taking all in all, the market is just about as good now as it was during the dull days of July and August.

Steam coal suffered a severe collapse earlier in the week. Prices on good grade Illinois screenings, which have been holding firm at $2@$2.85, slumped back to $1.25, and the end is not yet in

sight. Some of the stronger operators in the southern part of Illinois and in the Fourth Vein District of Indiana are holding out for $2 or more, but they are selling practically no coal. Mine run is not much better off and took a corresponding slump in price.

The industrial situation looks a little more cheerful, but those industries who are working apparently have enough coal on hand to keep them from worry and, consequently, are not in a mood to purchase. On account of the threatened railroad strike, followed by the trouble with the mine workers, a great many plants anticipated their coal needs and bought heavily. As a natural consequence, they are out of the market for the next two or three weeks. The only chance of an improvement in the steam market will be intense cold weather for a period of weeks, or renewed talk of a strike of the United Mine Workers.

SOUTHERN ILLINOIS

Miners at Work Again—Oversupply of All Sizes—Light Demand for Steam—Domestic Prices Easier.

A quietness prevails in the Carterville field that is disappointing. The warm weather has accumulated considerable stocks. Domestic is hit hard. Lump is unbilled at some mines and egg and nut are strung alone the sidetracks in full train-lots.

Steam is heavy. Domestic prices are pretty well maintained at $4.05 for lump and egg and $3.25 up on No. 1 nut. There is a wide gap between the high and low price on steam. Screenings are as low as $1, or were. Other reports show up to $1.75. Mines are getting about three days a week run.

In the Duquoin and Jackson fields somewhat similar conditions prevail. The Mt. Olive situation has eased up to such an extent that all grades of coal are unbilled and working time is down 50 per cent. Kansas City is drawing heavily, however, on account of unsettled conditions in the Kansas fields where some mines are on strike.

An oversupply did not affect the price on domestic sizes, which is $3.50 for St. Louis and Chicago shipment and $3.75 for country. Screenings when forced on the market brought $1@1.25.

In the Standard field prices hold up unusually well under the jolt. Working time dropped off to two and three days. Railroad tonnage continues good. General conditions, however, are not satisfactory and such coal as is moving is under pressure.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Demand Slows Down—Domestic Grades Well Booked—Prices Stable.

There has been a general slowing up in demand for all grades since strike scare, although most operators are well booked up for the present, especially on domestic. The major portion of the orders, however, were no doubt placed because of the strike flurry, as new business is scarce and hard to get.

The change in the weather is expected to bring back the domestic market. Current prices on best 4-in. block range $3.75@$4; egg, $3@$3.25; nut and slack, $1.30@$1.60; mine run, $2@$2.25.

West

UTAH

Retail Business Hurt By Warm Weather—Impossible to Market Slack —R.R. Fuel Buying Increases.

Retailers report another slump in demand. The reason for the change is due to the fact that the cold weather experienced toward the latter part of October was of short duration and the temperature has mounted again. However, large quantities of railroad fuel are being stored.

With slack at only $1.70 at the mine, producers are finding it difficult to secure a market for this grade. The price has been nearly cut in two during the past eighteen months, while other grades have gone up. The poor slack market is, of course, due to the industrial depression, which shows very few signs of improvement at present. Some of the companies are dumping their slack where they can get it should a market present itself.

News Items From Field and Trade

ILLINOIS

The Latham-Lincoln coal mine at Lincoln, one of the biggest mining properties in Logan County, has been purchased by the **Sangamon County Mining Co.** **Edward** Brennan of Springfield will be the business manager of the property while **James Casey** of Springfield, will be general superintendent.

The Valley Mine at Birkner Station, near Belleville, owned by the **West Virginia Coal Co.** of St. Louis, was the scene of a large fire recently. The flames destroyed the entire top works, including tipple, shaker-screens, picking tables, and all buildings. The origin has not yet been determined.

Mine No. 2 of the **Wasson Coal Co.**, located near Harrisburg has resumed operations after being idle for several months.

R. B. Rians, for the past twenty years with the H. W. Lynch Coal Co., of Peoria, has become sales manager for the Central West Coal Co., also of Peoria. The Central West company has mines in the Fulton-Peoria district, located on the Chicago, Burlington & Quincy.

Thomas L. Harris of St. Louis has acquired the controlling interest of the mine of the **Madison County Mining Co.** at Edwardsville, the four other stockholders transferring their interests at $160 a share. It is not known whether a new organization will be perfected or whether the property will be operated by Mr. Harris individually.

Three men from Harrisburg recently organized and incorporated the **Eagle Valley Coal Co.**, of Harrisburg with a capital stock of one million dollars. The men are Andrew Gish, A. W. Helmholtz and Ownly Furman who own a large acreage east of Harrisburg in the region known as Eagle Valley, hence the name. It is expected that the company will sink a large mine in the future.

M. J. Woodhull has been appointed central sales manager of the **Bucyrus Co.** to succeed E. G. Lewis in charge of the Chicago office.

The O'Gara Coal Co., is making extensive improvements at its No. 9 mine near Harrisburg. The mine has been idle for some time.

The annual meeting of the directors of the **Wasson Coal Co.** was held recently in Harrisburg and was attended by the various directors. The meeting is one in which much interest is usually manifested and this year a trip to the various mines owned by the company, was made by the entire party.

James A. Boopé of the MacWhyte Co. has been transferred from the Birmingham office to Chicago. He has been traveling the Southern States for the past twelve years. In addition to the Southern States he will take care of Illinois, Indiana, Kentucky and Missouri, out of the Chicago branch warehouse.

INDIANA

The Miller Coal Co., Terre Haute, has filed a final certificate of dissolution with the secretary of state.

The Fort Dearborn Coal Co., has closed its district office in Indianapolis. The company's representatives in the state will report directly to the Chicago office.

The offices and store at the Glendora Mine of the **Templeton Coal and Mining Co.** were recently destroyed by fire, sparks from a passing locomotive causing the blaze.

The Clovelly Mine, located north of Terre Haute on the Terre Haute division of the C. M. & St. P., has resumed operation after a period of inactivity. The mine is owned and operated by the **Fort Harrison Coal Co.** A few other large mines in this field which have been idle during the summer are preparing to resume normal production at an early date.

Contracts have been awarded and work will be soon started on the sinking of two shafts for a new coal mine on the property of the **Grasselli Chemical Co.**, north of Terre Haute. The Prevo Contracting Co., Pittsburgh, has been awarded the contract. Coal mined will be used exclusively to supply the three Indiana plants of the Grasselli company located at Terre Haute, East Chicago and Fortville.

KENTUCKY

The Saulsburg Coal Co., bankrupt, has filed schedules showing liabilities of $83,597.67 and assets of $60,890. J. W. Lam and the Hillside Coal Co., Greenville, hold secured claims of $47,000. Unsecured claims are $36,595.67, of which Leon Frankel, Louisville, holds $19,650 and Nathan Naririn, $5,150. Assets are composed principally of four coal tracts at Hillside, in Muhlenburg, valued at $50,000, and machinery valued at $10,000.

Articles of incorporation have been filed by the **Live Oak Land and Development Co.**, with a capital stock of $25,000. The new corporation will develop mineral lands in Kentucky. The incorporators are: J. H. Ferring,of Evansville, Ind.; T. W. Wolpert, of New Albany, and W. M. Viser and R. E. Wixon, of Louisville. The debt limit is not to exceed $150,000.

It is reported from Shelbyville that **Frank Wright** has left that city to go with the Central Pocahontas Coal Co.

James Watson, of the Consolidated Coal Co., Fairmont, has been in Pineville in connection with the Consolidated's interest on Puckett's Creek, Harlan County.

Frank D. Rash, of the St. Bernard Coal Mining Co., Madisonville, was in Louisville for several days, attending the annual meeting of the Grand Lodge of Masons.

O. W. Miller, president of the Long Branch Coal Co., Minneapolis, made a recent tour of inspection of the company's mines on Beaver Creek.

MINNESOTA

The yard of the **Western Coal & Coke Co.**, in northeast Minneapolis, was held up recently, and three armed men knocked down the yard master, robbed the cash register of $300 and made their escape. They cut the telephone wires to prevent help being summoned.

J. W. Neukom, of the firm of Cotton, Neukom and McDevitt, Duluth attorneys, has returned from Montana where he obtained options and leases upwards of 2,700 acres of coal lands. These were secured for Duluth parties but Mr. Neukom would not disclose the names.

MISSOURI

Suit has been filed by the **Madison Coal Corporation** of St. Louis, for $40,000 damages against the **Donk Bros. Coal & Coke Co.**, also of St. Louis. Both concerns have large mining operations in St. Clair County and the Madison company alleges that the Donk Bros. operations have driven entries in their territory and is taking coal which belongs to the Madison company.

Vernon Wells, formerly with the Union Colliery Co., and the West Virginia Coal Co., both of St. Louis, is now general sales agent for the Ellis & Richmer Coal Co., also of St. Louis.

NEW YORK

The Bucyrus Co. announces the removal of its New York office to 30 Church St. with E. G. Lewis in charge, effective Dec. 1.

Magnus Jensen and **James Cox**, coal exporters at 25 Broad St., New York City, were recently awarded a verdict of $134,800 by a jury in Justice Brown's part of the Supreme Court in a suit against Douglas A. Barnes, as president, and Joseph J. Weinhandler, as treasurer of the **Douglas Barnes Corporation** to recover $159,800 for the shipment of inferior coal to Copenhagen. The jury exonerated Weinhandler of all responsibility in connection with the shipment.

The plan by which **Burns Brothers** will acquire the property, rights, privileges and franchises of **William Farrell & Son, Inc.**, provides that 80,940 shares of new Class B common stock of Burns Brothers of New Jersey, to be delivered to Farrell & Son, is to be distributed by it to the holders of its common stock now outstanding, in the ratio of five shares of the new stock for eight shares of the common stock of Farrell & Son now outstanding. In order that the distribution may be affected on this basis, Farrell & Son will acquire for cash and will retire 496 shares of its common stock, so as to reduce the outstanding amount to 129,504 shares. A special meeting of the stockholders of Burns Brothers will be held on Dec. 1 to vote upon the proposition. A special meeting of the stockholders of Farrell & Son has been called for Nov. 30 when action on the proposal is to be taken. The stockholders of that concern will also consider the sale of the company's wholesale department known as **"Pattison & Bowns, Inc.,"** which has a capital stock of 2,500 shares of 8 per cent cumulative preferred stock, and 20,000 shares of common stock, divided into 9,000 shares of Class A common stock and 11,000 shares of Class B common stock. Farrell & Son have arranged to sell to the United States Distributing Corporation, the 2,500 shares of preferred stock and 11,000 shares of Class B common stock.

John T. Hatfield, vice president and general manager of the Reliance Coal and Coke Co., was a recent visitor in New York, where he held a conference with the president of that corporation, Julius Fleischmann.

OHIO

The Elkhorn Coal Co. has been chartered with a capital of $50,000 to do a general jobbing business. Incorporators are W. K. Elliott, George N. Rapp, Clifford McDermott, George A. Dormette and Alfred Opunger.

The organization of both the **Starr-Jackson Mining Co.**, and the **Starr Collieries Co.**, of Columbus, chartered recently with authorized capital of $50,000 each has been effected. The Starr-Jackson company will have Louis H. Helling as president; George Coyle, vice president and Ralph J. Kramer, secretary. The Starr Collieries will have Louis H. Helling as president; Don Creveling, vice president and Ralph J. Kramer, secretary. The Starr-Jackson company has taken over the Starr Mine on the H. V. Ry. in Hocking County from the Central West Coal Co. In addition, the Commonwealth Coal Co., of Martins Ferry, controlled by Louis H. Helling, is included in the organization. Sales will be handled through the Columbus office in charge of Ralph J. Kramer and a Cleveland office in the Kirby Bldg., in charge of Don Creveling.

Ralph Iago, for a number of years connected with the C. L. Ayers Coal Co., Cleveland, as secretary and treasurer, has resigned in order to accept the presidency of the Paragon Coal & Coke Co., with headquarters in Cleveland. Continued expansion of the Paragon Company's business led to the appointment being offered to Mr. Iago.

Geo. M. Jones, president of Cambria Collieries Co., Toledo, which operates in the eastern Ohio field, was a recent visitor to Bellaire.

P. C. Sprague, general freight agent of the Pennsylvania lines, St. Louis, Mo., has been appointed traffic manager of M. A. Hanna & Co., Cleveland, to succeed **Omar E. Anthony**, who was killed in an automobile accident several weeks ago.

The offices of the **Gibson-Spence Coal Co.** have been moved to the Ferris Bldg., Columbus. This concern formerly had its offices in the Ferris Bldg., but removed to the Schultz Bldg., several years ago.

Announcement has been made that **H. Walker**, prominent banker and coal operator of Tiltonville, Ohio, has purchased from the **Sauters Coal Co.**, Cleveland, Gaylord No. 2 Mine, embracing seventy-five acres of coal lands at Patton Run, Pease Township, Belmont County, located on the Pennsylvania near Martin's Ferry. Mr. Walker also operates the H. Walker Coal Mine at Deep Run, and the H. Walker Coal Co. mine at Adena.

The John Stack Coal Co., retail dealers, Lorain, has increased its capitalization from $15,000 to $25,000.

The W. E. Deegans Coal Co., of Huntington was represented in the Cincinnati market recently by **W. B. Hollandsworth**, who had been in Chicago arranging for the establishment of a Chicago branch.

Recent visitors in the Cincinnati market were: **W. J. Dillon** of Mitchell and Dillon, Chicago; **A. R. Klotten** of the R. G. Brown Co., Pittsburgh; **Sol Allen** of Prestonburg, Ky., and **R. E. Howe** of Shamrock, Ky.

L. H. Bobbitt, secretary-treasurer of the Wood-Morton Coal Co. has taken charge of the Wood-Morton Coal Co.'s Western office in Cincinnati. **E. H. Spreen**, who has been in charge, goes with the Thomas Mordue Coal Co., and **Paul Gillham**, Cincinnati manager for Mordue, will take a month's vacation before embarking in another line.

T. W. Arnette, president of the Antler Coal Co. of Fairmont has been in Columbus on business.

A recent visitor in the Cincinnati market was **G. H. Ewald**, president of the Standard Tide and Inland Coal Sales Co., with headquarters in Charleston.

PENNSYLVANIA

The Iron Trade Products Co., Pittsburgh, with branch offices in New York and Philadelphia, has become exclusive sales agents for the **Trucks Coal Mining Co.**, which is operating on the Conemaugh Division of the P.R.R. Trucks No. 1 Mine and Trucks No. 3 Mine are located at Apollo; Trucks No. 2 Mine is at Leechburg.

Edward F. McGlynn, for the past five years superintendent of the Marvine mine and for nearly a half century an employee of the Hudson Coal Co., has been appointed general colliery superintendent for that company, with headquarters in Scranton.

Jules Waterloo, superintendent of the Maryland Coal Co., at St. Michaels, has been named as superintendent of the Chester, W. Va., Coal Mining Co. **J. E. Lodman**, has been promoted to succeed him.

The Lorberry Coal Mining Corporation, Scranton, has been incorporated, capital stock $50,000; treasurer, John M. Hoen, 1630 Broadway, New York City. Incorporators are Carl Bomeiseler and F. M. Rittenhouse, New York City, and William Griffith, Scranton.

The Richard Fuel Co., of Gibsonia, has been incorporated for $50,000; treasurer, August P. Franks, Gibsonia. Incorporators are August P. Franks, Gibsonia and William P. Woodapple and Louis N. Peterson, Russellton.

Charles E. Reynolds has been appointed superintendent of the Springdale mine of the West Penn Power Co., at Springdale, Alleghany County.

A charter has been issued to the **Harte-Bee Coal Co.**, of Pottsville, $100,000 capital stock, to mine and prepare coal for the market. Incorporators are Charles H. Blanchard, Binghamton, N. Y., who is also treasurer; Waldemar Hartman, Mountain Lake, N. J., and N. Grier Parke, of Pottsville.

The Glen Alden Coal Co. will shortly start construction of a six-story modern office building in Scranton which it hopes to have completed and ready for occupation within a year.

The State Department of Health has issued permits approving the plans of the **H. C. Frick Coke Co.** for the installation of chlorinators in connection with the company's water works at its mining towns in Fayette County.

The Equitable Coal & Coke Co. has changed its name to the Hardwick Coal & Coke Co. Offices are in Pittsburgh.

Chief Button, of the State Department of Mines, has called a meeting for December in Pittsburgh, when all the state's bituminous inspectors will meet with representatives of the National Safety Council to discuss the adoption of a uniform danger sign adaptable to all the coal mines of the country. It is desired to agree upon a system which will be universal in its application to American coal mines.

The Moffit-Sterling Gas Coal Co. will commence the immediate construction of a new tipple at its coal properties at Dillinger, Greene County, to have a hoisting capacity of about 2,000 tons per day. Other improvements will be made at the works.

TEXAS

The Texas and Pacific Coal Co., at Thurber, closed since last spring, when miners refused to accept a reduction in wages, opened recently on the open shop basis.

The Empire Fuel Co. has acquired the properties of the **American Fuel Corporation**, comprising about 2,000 acres of land in the vicinity of Donnie, Freestone County. The holdings have been valued at about $2,000,000. The new owner plans for extensive development and production. Steam shovels, and other equipment will be installed to handle lignite under a stripping process. Adam H. Davidson is treasurer. New York offices of the company are at 347 Madison Ave.

UTAH

Register G. B. Blakely of Salt Lake City is hearing the case of the State of Utah and the **Pleasant Valley Coal Co.**, against L. A. Lawyer, which involves a 40-acre tract in the Castle Dale coal field. Lawyer filed on the land in 1919. The question is whether or not the tract contained known coal deposits when Utah was admitted to statehood.

The State Board of Equalization has announced the preparation of a new record to be used in the work of assessing mines in the Carbon County fields. The record will be in the form of a complete and comprehensive report from Harold Peterson, field geologist, and consists of maps and explanations of the entire Schofield mining district showing data available to the State board in the assessment of coal mines.

VIRGINIA

The Black Creek Coal Co., Big Stone Gap, recently organized, has leased a tract of coal land and plans for extensive development work. Considerable machinery will be installed. R. Tate Irvine is president.

The Heaton Coal Co., recently organized, is planning for the immediate installation of new equipment at Tacoma, including pumps, electrical apparatus, mining machinery, etc. The company has a tract of 150 acres and will develop a capacity of close to 500 tons per day. L. L. Heaton is president and general manager.

WASHINGTON, D. C.

So as to be available during the Limitation of Armaments Conference, the Geological Survey is making a special effort on a folder which contains a map of the District of Columbia. Great care and considerable ingenuity have been shown in the effort to make the names of streets clearly legible. The principal buildings and points of interests are emphasized on the map which is cleverly folded between staggered covers. Every effort has been made to produce an attractive cover and it is believed the publication will be prized as a remembrance of the arms conference.

The Federal Trade Commission announces the appointment of **William H. Fuller**, of McAlester, Okla., as its chief counsel.

A Treasury decision has been issued upholding the collector of customs at Philadelphia in refusing to admit mine postpullers and prop withdrawers as "miners' rescue appliances," free of duty. It is held that they are dutiable at 20 per cent ad valorem as manufactures of metal.

During the last fiscal year, coal land reserves were reduced by 215,494 acres. The Geological Survey made reports on 249 applications for coal prospecting permits and on 78 applications for coal leases.

The Bureau of the Budget has organized a **Federal Purchasing Board** which will shortly select a committee to handle government purchases of coal. The chairman of the committee will be a representative of the Interior Department, and the other members will be representatives of the Navy and War Departments.

Arguments have been heard in the Court of Claims in the suit of the **Corona Coal Co.**, a Delaware corporation operating in Alabama, which seeks to recover from the Government $107,431 on coal sold to railroads under Federal control. The company says it received $385,593 for 171,476 tons of coal while the figure under Fuel Administration prices was $486,997. The Government argued that there was no merit to the suit as the coal was sold under contract between the coal company and the railroads.

WEST VIRGINIA

The Canyon Coal & Coke Co. of Uniontown, doing business in West Virginia, has increased its capital stock from $500,000 to $750,000.

T. L. Lewis, secretary of the New River Operators' Association with headquarters at Charleston, was a recent visitor in Fairmont. Mr. Lewis was formerly president of the United Mine Workers of America.

William K. Hatfield of Morgantown has been chosen by the stockholders of the **Rosedale Coal Co.** of Morgantown as president of that company to succeed **C. L. Lantz,** who recently died in a Pittsburgh hospital.

W. J. Kearns has resigned as sales manager of the Kenova Mine Car Co. He will go into business for himself. He was formerly with the Hyatt Roller Bearing Co., and prior to that was general superintendent of the Isabella Connellsville Coke Co.

The Fayette-Kanawha Coal Co. is suing the **Lake and Export Coal Corporation** for $166,000, involving the question of the fulfillment of a contract for delivery of coal by the plaintiff at the price prevailing when coal was at the height of the market last year.

E. E. White, one of the leading operators of the Winding Gulf region and president of the E. E. White Coal Co. with plants at Stotesbury and Glen White, was a visitor in the Pocahontas field the latter part of October.

R. H. Kann, formerly superitendent of the Consolidation Coal Co. at Mine No. 37, Berryburg, has been transferred and made superintendent at mines 88, 89 and 90 at Wyatt, succeeding **W. D. Thomas,** resigned. **James Hovey** has been appointed acting superintendent of mine 37, Berryburg.

Isaac T. Mann, of Washington, D. C., president of the Pocahontas Fuel Co., the largest company in southern West Virginia, was a visitor in the Pocahontas field toward the latter part of October.

ALBERTA

At the third annual western convention of the **Canadian Institute of Mining & Metallurgy,** held at Edmonton, an address was delivered by the new premier, Mr. Greenfield; his subject was the research work of the government in the matter of the mineral industry. "The government is endeavoring," he said, " to develop more market for Alberta coal, but have met with difficulty in the grading of the coal." He deplored the lack of uniformity in grading, which had proved a hindrance in the market of the product. He suggested the adoption of a uniform system of grading coal.

ONTARIO

Among the recent coal men to visit Toronto were: **W. T. Carden** and **William Bolland,** of Bolland Brothers, Scranton; **C. E. Greaves,** of the E. L. Hedstrom Co., Buffalo and **Frank Howard,** of the Bellebridge Coal and Coke Co., Pittsburgh.

A discovery of coal at Larchwood about 17 miles west of Sudbury, is reported though there is considerable doubt as to whether it occurs in commercial quantities. It is now being worked by a Toronto syndicate, which has leased 20,000 acres around the discovery. Test pits have been sunk for 14 ft. and some stripping done. Dr. A. P. Coleman of Toronto University described the material found in the same locality some time ago as anthracite, and considers that owing to its mode of occurence in veins, and not in seams or beds after the manner of ordinary coal, it is not likely to be found in quantity. It has a high percentage of carbon.

Traffic News

The I. C. C. has authorized railroads to establish rates on bituminous coal from points in Ohio to Marysville, St. Clair and Marine City, Mich., via the Michigan Central; Caro, Mich., and the Detroit, Bay City and Western R.R.; also via the Pere Marquette Ry., Saginaw and Port Huron, Mich., and the Detroit, Bay City and Western, the same as rates via the direct lines between these points.

Hearing in the matter of reduced rates on coal to Kansas City, Mo., scheduled for Nov. 26 at Kansas City, has been postponed to Dec. 7.

The I. C. C. has cancelled its investigation and suspension of rates on coal from Wyoming mines to stations in Utah, the carriers having withdrawn the schedules.

In the complaint of the **Far West Clay Co.,** an examiner recommends that the rates on coal from Floran to Clay City, Wash., during Federal control be declared unreasonable.

Speaker Gillette of the House has introduced by request a bill designed to secure continuous operation of railroads by a system of joint control of capital and labor, with a provision authorizing the I. C. C. to lower rates on coal and other necessities so that producers may reach markets at reasonable rates and make living profits and the consumer may purchase at lower prices.

The I. C. C. has decided that the rate on bituminous coal from Harveyton, Ky., to Red Bank, Ohio, is unreasonable.

The Premier Coal Co. and the **Siberia Rock Springs Coal Co.,** of Ogden, have complained to the I. C. C. against unreasonable rates on water from water stations to mines located in Illinois, and request a refund of $12,800 on former shipments.

The Webb Fuel Co., of Ferndale, W. Va., and Cincinnati, allege unreasonable charges on coal from Ferndale to Madry Siding, N. C., due to failure to observe shipping instructions.

The Litchfield & Madison R.R. is making a physical connection with the Burlington lines at Litchfield, Ill., which will give the Litchfield and Madison an outlet north for their coal.

The Cincinnati Association of Purchasing Agents complain against unreasonable rates on bituminous coal from mines on the lines of the L. & N. in Kentucky, Tennessee and Virginia to points in the Metropolitan Cincinnati District and to points in Kentucky from points in Virginia and Tennessee.

The Alaska Anthracite R.R. Co., has asked authority to issue 2,500 shares of common stock to extend its main line from its present terminus on Canyon Creek to the loading point of the Alaska Pacific Coal Co., 1½ miles.

The Citizens Gas Co., Indianapolis, requests a rate of $3.50 per ton on coke from Indianapolis, to Omaha, the present rate being $3.70.

The Wabash Portland Cement Co., Detroit, alleges unreasonable rates on bituminous coal from points in Ohio, Pennsylvania, West Virginia and Kentucky, to Stroh, Ind., as compared with rates to Coldwater, Cement City and Chelsea, Mich.

The Pennsylvania Public Service Commission has ordered the Lehigh & New England R.R. Co. to reduce its rates for hauling coal from Coaldale, Lansford, Nesquehoning and other places in that neighborhood to the plant of the Pennsylvania Power & Light Co., at Hauto, to 35c. a ton. This order sustains complaint of the Pennsylvania company, and in announcing its decision the commission says the contention that the commission has no authority to change its rates within the Federal guarantee period is without merit. The rates of 40c. and 70c. in effect during the period covered by the complaint, are set aside.

J. L. Schultze & Co., and others of Skaneateles, N. Y., allege unreasonable rates on anthracite from points in Pennsylvania to Skaneateles and vicinity as compared with rates from the same region to Syracuse on shipments moving prior to Federal control.

In the complaint of the **Clinchfield Coal Corporation** the commission holds that former and present rates on bituminous coal from Moss, Va., to Toledo, Ohio, are not unreasonable.

Trade Catalogs

Jeffrey Material Handling Machinery — The Jeffrey Mfg. Co., Coumbus, Ohio. Catalog 350. Pp. 215; 6 x 9 in.; illustrated, charts and tables. Contains price lists and dimensions of Jeffrey chains, sprockets, conveyor and elevator details, transmission and gears.—Advertiser.

Small Generating Sets — Allis-Chalmers Mfg. Co., Milwaukee, Wis. Bulletin 1117. Pp. 4; 8 x 10½ in.; illustrated.—Advertiser.

Atlas Combination Storage Battery & Trolley Locomotives — The Atlas Car & Mfg. Co., Cleveland, O.—Bulletin No. 1212. Pp. 8; 8½ x 11 in.; illustrated.—Advertiser.

Coal Mining Plants—Roberts & Schaefer Co., Chicago, Ill. No. 45; pp. 63; 8 x 11 in.; illustrated. Description of mechanical equipment of machinery and completed structures recently designed and built by the company.—Advertiser.

Recent Patents

Feeder for Powdered Fuel. John U. McDonald, Decatur, Ill., 1,386,009. Aug. 2, 1921. Filed Oct. 11, 1919; serial No. 330,090.

Coal-Car Check Holder. John B. Sparks, Raven, Va., 1,386,378. Aug. 2, 1921. Filed Jan. 12, 1921; serial No. 436,737.

Miner's Drill. Samuel T. Skeen, Sandoval, Ill., assignor of one-half to Charles E. Stead, Centralia, Ill., 1,386,434. Aug. 2, 1921. Filed Oct. 10, 1919; serial No. 329,852.

Coming Meetings

The American Institute of Consulting Engineers, Inc., will hold its annual meeting Jan. 16, 1922, at the Engineers' Club, 32 West 40th St., New York City. Secretary, F. A. Molitor, 35 Nassau St., New York City.

West Virginia Coal Mining Institute will hold its next meeting Dec. 6 and 7 at either Charleston or Huntington, W. Va. Secretary, R. E. Sherwood, Charleston, W. Va.

New England Wholesale Coal Association will hold its annual meeting Jan. 10, 1922, at Boston, Mass. Secretary, R. S. Townsend, 27 Kilby St., Boston, Mass.

Southern Appalachian Coal Operators' Association will hold its next meeting Jan. 27, 1922 at Knoxville, Tenn. Secretary, J. E. McCoy, Knoxville, Tenn.

Pike County Coal Operators will hold their annual meeting Jan. 6, 1922, at Pikeville, Ky. Secretary, F. E. Miller, Pikeville, Ky.

The Coal Mining Institute of America will hold its annual meeting at Pittsburgh, Pa. Dec. 7, 8 and 9. Secretary H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

The Illinois Mining Institute will hold its fall meeting in the City Hall, Springfield, Ill., Saturday, Nov. 19. Secretary Martin Bolt, Springfield, Ill.

American Society of Mechanical Engineers will hold its annual meeting, Dec. 5-9 at the Engineering Societies' Building, 29 West 39th Street, New York City. Secretary Calvin W. Rice, 29 West 39th Street, New York City.